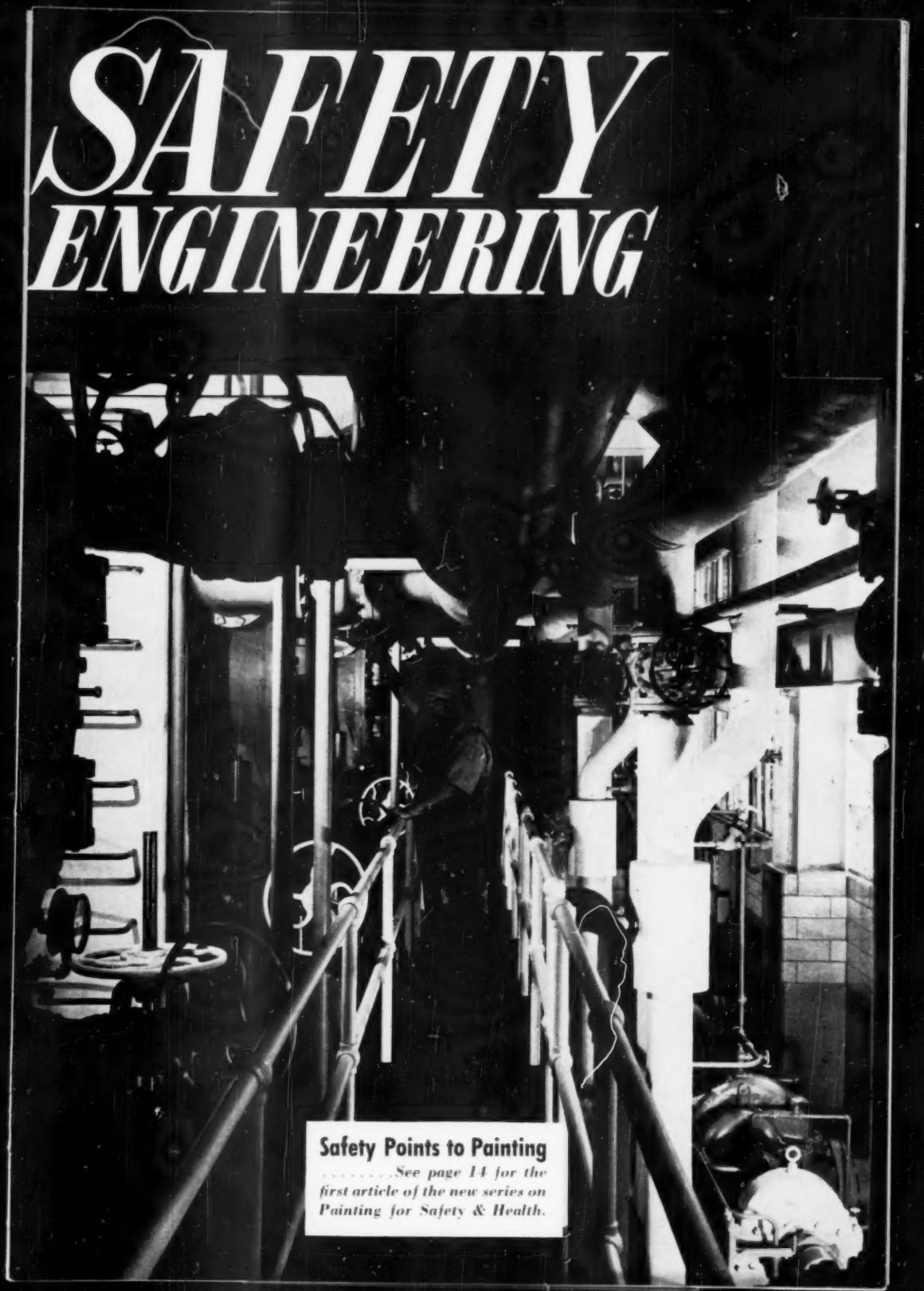
SAFETY ENGINEERING



Safety Points to Painting

.....See page 14 for the first article of the new series on Painting for Safety & Health.

Here's One Expense Cost-Conscious Management has cut — to Rock Bottom in these Days of Rising Costs

Year after year, industrial eye accidents embezzle your profits and cut your production by sidelining able men, putting machines in the hands of less experienced workers, lowering morale, hiking claims and insurance costs. All this on top of the cost of medical service!

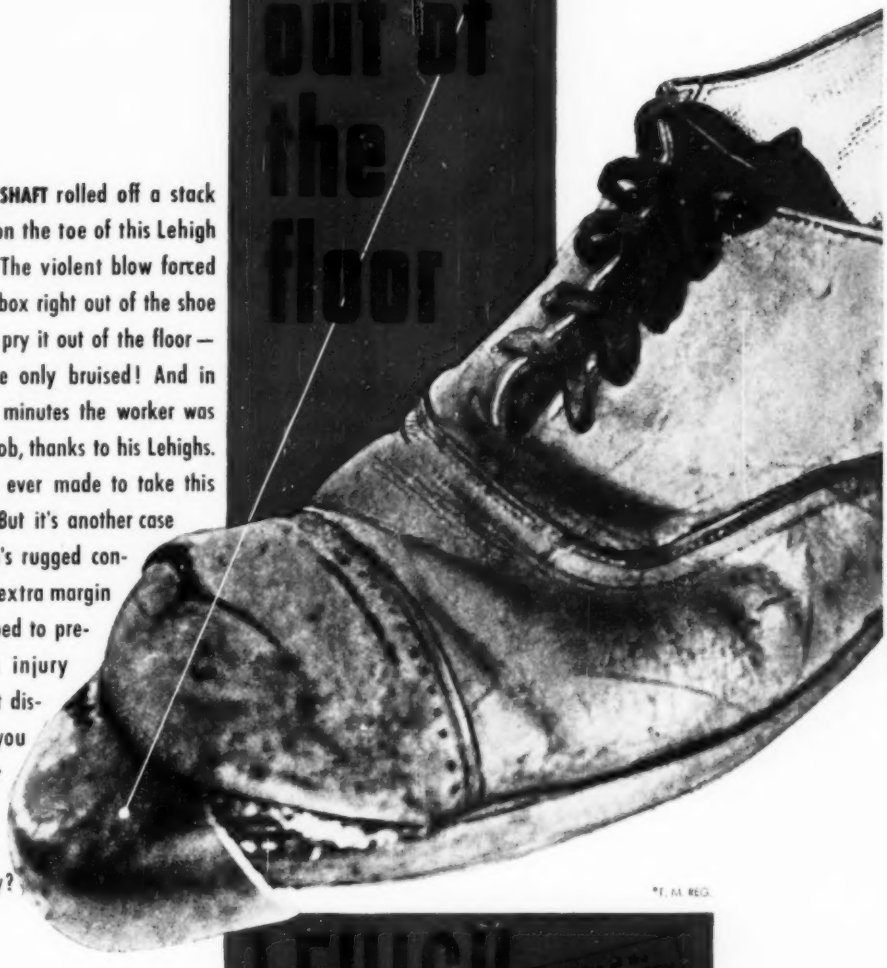
Aware that 98% of industrial eye accidents are preventable, many companies have solved this problem by installing an adequate eye protection program with results like this: cost of eye accidents in year prior to program, $4,262.00; cost of eye accidents in first year of program, $204.59! Ask your AO Safety Representative how an AO Eye Protection Program can cut your costs.

American Optical COMPANY

Safety Division

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

we pried it out of the floor



985 LB. STEEL SHAFT rolled off a stack and landed on the toe of this Lehigh Safety Shoe. The violent blow forced the steel toe box right out of the shoe — we had to pry it out of the floor — but toes were only bruised! And in less than 20 minutes the worker was back on the job, thanks to his Lehighs. No shoe was ever made to take this punishment. But it's another case where Lehigh's rugged construction and extra margin of safety helped to prevent serious injury or permanent disability. Have you checked your hospital records for foot injuries lately?

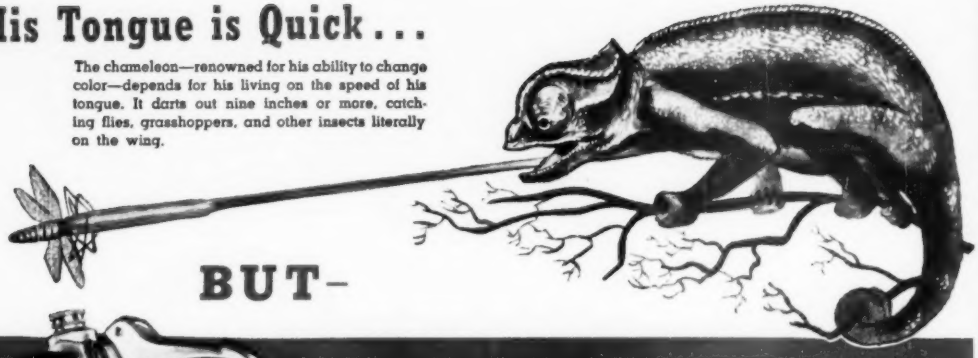
*T. M. REG.

LEHIGH
SAFETY SHOE COMPANY
ALLENTOWN, PA.

Published by Alfred M. Best Company, Inc., Publication Office, Box 1259, Albany, N. Y. Editorial and General Offices, Best Building, 75 Fulton St., New York 7, N. Y. Entered as Second Class Matter at Post Office at Albany, N. Y. Under Act of March 3, 1879. Subscription rates $4.00 Per Year in the United States; $5.00 in Canada; Foreign, $5.00. Single Copies, 50 cents. Publication Date 15th.

His Tongue is Quick . . .

The chameleon—renowned for his ability to change color—depends for his living on the speed of his tongue. It darts out nine inches or more, catching flies, grasshoppers, and other insects literally on the wing.



BUT—

Nothing is Quicker than GENERAL QUICKAID FIRE GUARD For Fighting Fire!

Your life or your property may depend on the speed of your fire fighting equipment. A few seconds may spell the difference between a tiny flame and an unmanageable blaze. Quick-Aid Fire Extinguishers save you precious seconds because they operate quickly, cleanly, efficiently. Quick-Aid Carbon Dioxide Extinguishers (illustrated here) are available in all sizes from 2½ to 100 lbs. They are Underwriters' Approved and especially recommended for fires in electrical equipment, gasoline, and chemicals. Look in the classified section of your telephone book for the Quick-Aid trade mark or write direct for the name of your nearest dealer.

THE GENERAL DETROIT CORP.
DETROIT 7, MICHIGAN
NEW YORK • ATLANTA • CHICAGO • DALLAS

Subsidiaries:
THE GENERAL PACIFIC CORP.
LOS ANGELES • SAN FRANCISCO • SEATTLE
THE GENERAL DETROIT CORP., CANADA, LTD.
WINDSOR • MONTREAL • TORONTO • WINNIPEG

IF IT'S GENERAL IT'S DEPENDABLE

Your Guarantee

OF A CANVAS RESISTANT TO FIRE, WATER, WEATHER AND MILDEW

FIRE-CHIEF® Canvas, manufactured by William E. Hooper & Sons Company, always carries the above trade mark on the selvage. Look for it. It is your guarantee of a *permanent, quality* finish.

FIRE-CHIEF® PRODUCTS are manufactured under U. S. Patents No. 2,044,167, No. 2,299,612 and other patents, all owned by William E. Hooper & Sons Co.

A PRODUCT OF *Hooperwood Mills*

From only the best cotton

WM. E. HOOPER & SONS CO.

General Sales Offices:

New York PHILADELPHIA Chicago

320 Broadway Juniper & Cherry Sts. 300 W. Adams St.

Hooperwood Mills: Woodbury, Baltimore, Md.

DRY CHEMICAL

FIRE EXTINGUISHERS ARE YOUR *BEST* PROTECTION

. . . and most economical, too! Tests conducted by impartial, nationally recognized approval laboratories have proved the superiority of Ansul Dry Chemical Fire Extinguishers on *Flammable Liquid Fires.*

In addition, Ansul Fire Extinguishers provide greater safety for the operator. The stream of Ansul Dry Chemical forms a protective screen safeguarding him against radiant heat.

More and more industrial plants, transportation companies, oil companies, etc. are switching to Ansul Extinguishers as their first line of fire defense. There is a reason . . .

Get the facts. Send for your copy of File No. 407. You'll also receive our latest literature together with comparative rating charts for the various types of fire extinguishers.

- **Safe for use on electrical fires too! Even high voltages are not conducted by dry chemical stream.**
- **Can be recharged at scene of fire furnishing continuing protection.**
- **Annual recharging is not necessary. Low maintenance costs.**
- **Longer range stream of dry chemical is effective in winds and drafts.**
- **Ansul Dry Chemical is non-abrasive, non-corrosive, non-toxic.**
- **Listed and Approved by Underwriters Laboratories and Factory Mutual Laboratories.**

ANSUL CHEMICAL COMPANY
FIRE EXTINGUISHER DIVISION, MARINETTE, WISCONSIN
DISTRIBUTORS IN ALL PRINCIPAL CITIES

Eye HAZARD SIGNS

STONEHOUSE SIGNS
For Accident Prevention

SAFETY FIRST
WEAR GOGGLES OR USE SHIELD
SAVE YOUR EYES WEAR GOGGLES
SAFETY FIRST
WEAR YOUR GOGGLES WHEN GRINDING
NOTICE
ALL PERSONS WORKING IN THIS DEPARTMENT — MUST — WEAR GOGGLES
DANGER
WEAR GOGGLES WHEN HANDLING ACID OR SOLDER

The Glasses of Confucius

FOR centuries the Chinese have worn glasses, tho in those early days they knew nothing of the grinding of corrective lenses.

The first definite historical reference to the wearing of glasses is found in the writings of Confucius, about 500 B. C.

Marco Polo, the explorer, who visited China during the reign of Khublai Khan, in the 13th century, A. D., also states that he found aged persons in the empire wearing spectacles with tortoise frames.

. . . . .

Those old Chinese spectacles were really GOGGLES, because they were made of plain crystal and simply shielded the eyes. So the wise old Chinese were the first to say "Wear Your Goggles."

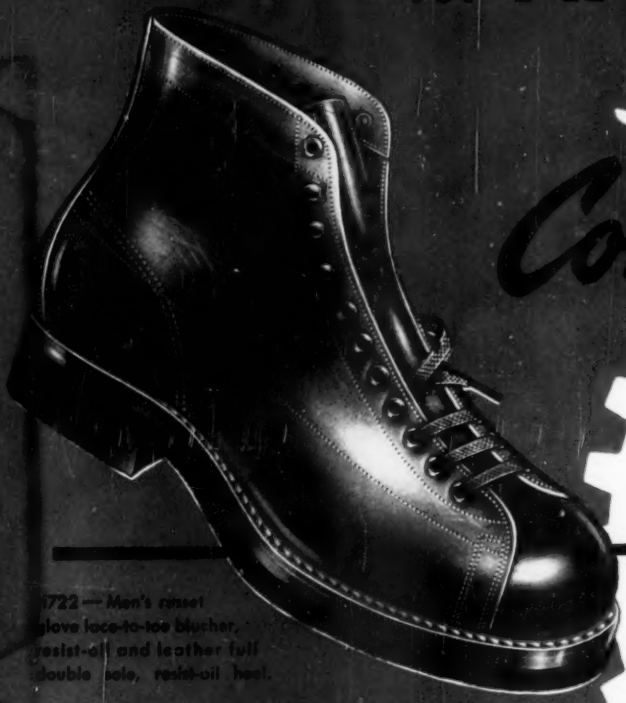
That's the message, in many forms, which features Stonehouse "Goggles" and "Eye Hazard" Signs, shown in our catalog No. 8. It's free on request.

Stonehouse SIGNS, INC. Stonehouse Bldg. • 9th at Larimer • Denver 4, Colorado
MANUFACTURERS
"Stonehouse Signs Since 1863"

ACCIDENT PREVENTION SIGNS IN STANDARD COLORS AND DESIGNS

You can't beat

HY-TEST ANCHOR FLANGE Safety Shoes for PROTECTION plus Comfort



5722 — Men's *comfort* glove face-to-toe blucher, resist-oil and leather full double sole, resist-oil heel.

Yes sir, there is such a thing as a *comfortable* safety shoe . . . it's Hy-Test. All Hy-Test safety shoes are built for action . . . built to give the comfort that active jobs require. And you can bet the protection is there in every pair, thanks to Hy-Test's Anchor Flange steel box toe.

WRITE FOR FREE CATALOG

. . . Insure Worker's Feet in Sure Protection

with **HY-TEST** ANCHOR FLANGE *Safety Shoes*

THE WORLD'S LARGEST SELLING SAFETY SHOE

HY-TEST DIV: INTERNATIONAL SHOE CO. • ST. LOUIS 2, MO. • EASTERN OFFICE • MANCHESTER, N. H.

HY-TEST SAFETY SHOES

Editor-in-Chief
ALFRED M. BEST

Editor
HARRY De G. ARMAND

Assistant Editors
RALPH P. EAMES
PRESTON A. WILSON

Consulting Editor
ARTHUR C. CARRUTHERS

• • •

BUSINESS DEPARTMENT

Executive Vice President
ARTHUR SNYDER

Sales Manager
WALTER H. BROCKHAVEN

Executive Representative
HENRY T. RAWLINGS

Field Representatives
H. ADER E. SEWARD
FRANK WALDRON

Publication Office: Box 1259, Albany, N. Y.
Editorial and Advertising Offices:
BEST Building, 75 Fulton St., New York 7, N. Y.

BRANCHES

WESTERN
RAYMOND T. SMITH, Vice-President
FRANK J. MATRE, Sales Mgr.
WM. T. ELLIOTT, Field Repr.
10 South La Salle Street
CHICAGO 3, ILL.

EAST CENTRAL
PAYSON H. RYAN, Vice-President
FELIX T. McCARTHY, Jr., Spec. Rep.
Ingalls Building, 6 E. 4th St.
CINCINNATI 2, OHIO

NEW ENGLAND
WALTER A. SPANGLER
W. LAWRENCE HOWE, Field Repr.
50 Congress Street
BOSTON 9, MASS.

SOUTHEASTERN
NEIL A. KAIN
1516 The 22 Marietta Street Building
ATLANTA, GEORGIA

SOUTH CENTRAL
GENE HANSELMANN
318 Walnut Street
CHATTANOOGA 3, TENN.

SOUTHWESTERN
ROBERT S. BEGIEN
1230 Irwin Keasler Bldg.,
DALLAS 1, TEXAS

PACIFIC COAST
HAROLD F. KANE
3757 Wilshire Blvd.
LOS ANGELES 5, CAL.

Copyright, 1949, Alfred M. Best Company, Inc.
SUBSCRIPTION RATE: ..... $4.00 PER YEAR

SAFETY ENGINEERING

The Magazine of Safety

Reg. U. S. Pat. Off.

A MONTHLY PUBLICATION DEDICATED TO ACCIDENT PREVENTION, HEALTH CONSERVATION AND FIRE CONTROL.
EST. 1901

VOL. 97, NO. 2 **BEST'S 50TH ANNIVERSARY YEAR**
FEBRUARY **1949**

EDITORIALS

Red Face Department 8
Sun Glassitis 8

* * *

How Much Does an Accident Cost? by C. W. NICKERSON 11
Don't Drown Your Feet(foot protection series) by C. P. McFADDEN 12
You Can See with Painted Light (safety painting series) by RALPH P. EAMES 14

* * *

Mechanical-Filter and Chemical-Cartridge Respirators (respiratory series) by DR. ALLEN D. BRANDT 16
Safety Goes to Sea by HARRY ARMAND 19
Asphalt Tile for Safe Flooring (safe flooring series) 22

* * *

Safety Rides the Rails on the Santa Fe (Part 2) by ALBERT A. MOREY 25
What Happened to Fire Losses During 1948? 29

* * *

Learning the Hard Way 54
The Future Shows 58–59

* * *

Industrial Hygiene 61
How Big Is Our Job? 61
The Industrial Nurse 66

* * *

Free Bulletins & Catalogs 69
New Products in the Safety Field 70
Index to Advertisers 72

*

PICTURE CREDITS

Our Thanks for the Courtesy
Cover: Pittsburgh Plate Glass Company
Photograph page 21: From Three Lions

AMERICA'S PIONEER SAFETY MAGAZINE

SAFETY ENGINEERING is indexed regularly by Engineering Index, Inc., New York

It's Safe to Say

 • ENTIRE CONTENTS COPYRIGHT, 1949, BY ALFRED M. BEST COMPANY, INC. ALL RIGHTS RESERVED

★ RED FACE DEPARTMENT

IT IS always considered a tribute of reader interest and loyalty when a publication is taken to task for a slip of the typewriter. Constructive criticism needs no apology and all but the most pompous, editorial stuffed shirts will recognize as well-intended a subscriber's taking the trouble to write in a vein of "tsk-tsk."

Truth to tell, editors as a test of reader interest have been known to needle deliberately the subscription lists by publishing a statement or illustration open to vehement comment to determine just how closely attention may be riveted to the news columns. Actually, however, that policy is rather sophomoric. On the other hand, a photograph may be used to emphasize a point while at the same time the sum total of the general effect may be questionable.

This is particularly true in the safety field where a picture illustrating hazard correction in one direction may show, in its entirety, another hazardous condition crying aloud for corrective action.

A case in point occurred in the December issue of SAFETY ENGINEERING in connection with a feature article on hand protection. An illustration was used to focus specific attention upon the need for protective gloves to safeguard the wearer against burns and irritations while filling a carboy with sulphuric acid. Obviously, the text matter dealt entirely with the subject of gloves but unfortunately the picture caption made no mention of the importance of face and eye safeguards, aprons and other vitally important articles of personal protection. Is our face red!

One writer reported that his task of inculcating safe practices was rendered even more difficult by such illustrations which tended to "break down" all the effort of his safety department. Discounting for the moment the intemperate and even extravagant tone of the complaint, we find ourselves asking why the insistence upon safe practices should be more difficult than any other daily duty. Is it possible that the methods pursued by management may be at fault?

It would seem that capital could be made of the editor's sin of omission. The offending picture should be brought to the view of every man in the plant whose duties require possible contact with hazardous liquids. Then, a safety sermon could be created to demonstrate the futility of protecting the hands against acids while leaving the eyes and other vital parts of the body vulnerable to potential accidents.

Statistics and reports of near-accidents reaching this desk describe with sickening effect the results of acid splashes in the eyes, in the face and on the body. Therefore, the workers require the fullest possible measure of protection in the form of eye protectors, face shields, aprons, sleevelets and leggings in addition to gloves suitable for the job. In many cases, safety shoes too are necessary to guard against toe-smashing by heavy carboys.

You, as well as we, know what's needed. It's up to us to see that requirements are met and the job is done with full recognition of the possibility of accident.

In the meantime, the editorial department accepts with good grace the spanking of readers who, we hope, will continue to be as quick with adverse criticism as they are with praise for a job well done.

★ SUN GLASSITIS

WITH the coming of milder weather, not now apparent on the horizon of the eastern seaboard, a vast segment of the American public will begin to crowd the counters where sun glasses are sold so that in a few short months we will appear to be a nation of black-eye victims. Unfortunately, the bulk of the buying public is not trained to detect even excessive distortion in sun glasses and is prone, therefore, to buy on the basis of price alone. Thus, there is thrown another dangerous burden on already overworked eyes.

Sun glasses of inferior optical quality can create lasting injury and may result in highway accidents, serious falls, headaches, eyestrain and even permanent impairment of vision. There is now an organization which lists five requirements for safe optical performance based upon tests for prismatic effect so that lens will not act as prisms; tests for lens action to guard against changing the apparent size of objects viewed; tests to determine clarity without distortion; tests for invisible radiant energy and for transmitted light with lens free of all such visible defects as waves and bubbles.

Bargain-counter sun glasses are no bargain. Conversely, fantastically over-priced glasses are a waste of money, and unnecessary over-use of *any* sun glass is an affectation which we can leave to the glamour-queens of Hollywood. H.A.

new, extra-wide, molded

MODEL
#30 eye SAVERS

fit over widest safety spectacles

In many industries workers wear wide, heavy safety-glass spectacles. Most cover goggles are not wide enough to cover these spectacles, protect them from scratching, pitting and other damages. Now, Watchemoket has developed Extra-Wide, molded ***Model #30 Eye Savers.*** *Fit comfortably, easily over all spectacles...even the widest safety spectacles. The frame is molded...stronger, to withstand heavy impact, has extra large bridge size to provide universal fit, pleasant wear. All built around the famous Eye Savers* ***Impax**** *plastic lenses. And so light-weight that workers keep them on. #30 can help make your eye safety program more completely successful. Saves eyes from injury, spectacles from damage.* ***Call your Eye Savers Dealer today, or write:***

* T. M. REG.

WATCHEMOKET OPTICAL CO., INC.,
PROVIDENCE 3, RHODE ISLAND

In **Canada**: Levitt Safety Appliances Co., Toronto 12, Ont.
In **South Africa**: Keip Brothers, Johannesburg, South Africa
In **Scandinavia**: Uppsala Optiska Industri, Uppsala, Sweden

ARE YOUR SOLES SHOWING

NEO-CORD

LONG WEARING SAFETY

RESISTS ACIDS AND CAUSTICS

RESISTS OIL AND GREASE

RESISTS EXTREME HEAT

RESISTS SKIDDING

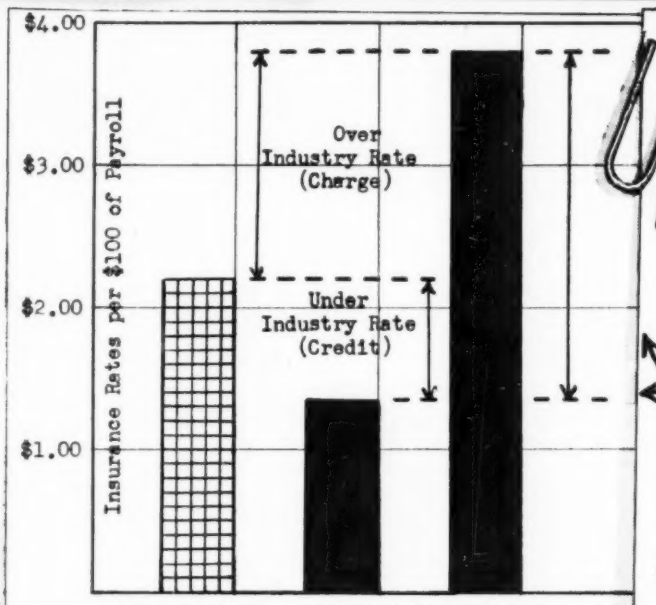
Exhaustive tests and years of actual usage have proven the superiority of NEO-CORD soles and heels for safety shoes. NEO-CORD soles combine DuPont's Neoprene with Gro-Cord's outstanding corded construction. This means more wear, more foot comfort, and greater safety for your men. Write for complete information and list of safety shoe manufacturers who supply shoes with NEO-CORD soles.

· · · BOTTOMS · · ·

that are TOPS in SAFETY

GRO-CORD RUBBER CO.

LIMA, OHIO



COMPARISON OF RATES OF WORKMAN'S COMPENSATION INSURANCE FOR TWO PLANTS IN SAME INDUSTRY

Plants "A" and "B" are two companies in the same industry, identical in operation and size.

"A"'s management has good control over accidents: the insurance rate is well below the industry rate.

"B"'s management is indifferent to the accident problem: the insurance rate is well above the industry's.

SAFETY ENGINEERING
VOL. 97, NO. 2 • FEBRUARY 1949

Bob—
Take a look at this chart sometime. This difference in the established rate for each plant—computed on a $500,000 payroll—would amount to a $12,000 premium saving for plant A compared to plant B.
Roger

By C. W. NICKERSON*

HOW MUCH DOES AN ACCIDENT COST?

Today, an accident is practically a planned event, and its cost is a heavy drain on profits and production.

SAFETY may not be a particularly entertaining subject, but it is a matter that concerns everyone whether at home, on the streets and highways, or in a factory or business establishment. No phase of our life, asleep or awake, escapes the tragedy and loss that follows an accident.

One dictionary defines an accident as—"an unexpected or an unforeseen event, generally unfortunate." The only part of that definition which would be retained if the present day safety engineer were to define an accident are the last three words. He would agree an accident is an "event, generally unfortunate."

Accidents are not unexpected or unforeseen events. Accidents don't just happen, they are caused. It might even be said that, because of our present knowledge and skill in accident prevention measures, an accident resulting from failure to apply this knowledge and skill is not an unexpected event, it is practically a planned event, inadvertently planned, of course.

Any employer who fails to maintain active interest in accident prevention, who fails to seek out the facts about accident losses in his establishment, who fails to take corrective action based on these facts is behind the parade. He should not be so brash as to call these tragedies and these losses unexpected or unforeseen.

In any plant, accidents that *don't* happen (To page 44)

* The author is the New York division manager for the loss prevention department of a leading insurance company.

DON'T

By C. P. McFADDEN,
Chairman, Rubber Footwear Div.,
The Rubber Manufacturers Association

AS AMERICAN progress in industry and agriculture moves forward, it takes some of its strides in rubber footwear.

Millions of workers in the mine, on the farm, in the factory, in transportation and in public services, find rubber footwear practically indispensable to the proper and efficient performance of their jobs.

Many persons may think of rubber footwear only as a protection against rain and snow, calling to mind the many types of dress rubber footwear designed for men, women and children to keep their feet dry in inclement weather. This health-protective rubber footwear is a major part of the production of American manufacturers of rubber footwear, but another very important part of that production goes over the feet of men and women employed in a wide category of occupations.

In these fields, rubber footwear makes the work easier and in some cases, it might be said, rubber footwear makes the work possible. While these tasks could be done without rubber footwear, they could not be done with the efficiency that is possible with the use of rubber footwear; such jobs as have to be done in water, or in soft, cold mud and in exposure to harmful acids.

This fact was recognized by government officials during the recent war when allocations of natural rubber, probably the most critically-short material essential to the war effort, were made to rubber footwear manufacturers to produce essential health items and industrial and agricultural rubber footwear.

Rubber footwear is probably the oldest commercially-produced rubber product—having been made and merchandised for over a hundred years. During that time many innovations have been developed to meet the peculiar requirements of certain industries, increasing the usefulness of rubber footwear beyond its basic purpose which is to keep the wearer's feet dry. Such added protection as the safety steel toe has been introduced into certain items. This safety toe has been described at length in a previous article in this magazine. While that article dealt with leather shoes, the application of the uses and purposes of the steel toe is the same in rubber footwear.

Rubber footwear is called upon more, of course, in the cold seasons when rain, sleet and snow hamper all kinds of activities. This is when it is used most by the farmer, the railroader, the trucker, the builder, the maintenance man, the linesman, the policeman and, of course, the postman.

Types of Rubber Footwear

But throughout all seasons, many workers are protected in the performance of their tasks by rubber footwear. These may be covered in a brief description of the various types of rubber footwear and their special adaptation to various types of work.

1. Boots. In boots the worker wants good fit, comfort, long wear, as well as waterproof protection. There are three main types of general purpose boots widely used in

DROWN YOUR FEET

What types of rubber footwear are now available to maintain safety and health in industry and public service? How should rubber footwear be cared for and kept sanitary?

industrial work. These are the short type, the three-quarter length storm king boot and the hip boot. These are made with both plain and safety toe.

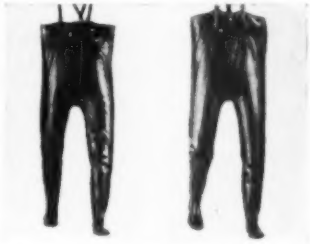
The short, the storm king and the hip length boots are widely used in industrial plants, water and sewage projects and departments, building and road construction, slaughter houses, tanneries, breweries, laundries, and by garage and auto workers, as well as by commercial fishermen and miners. All are worn over socks and some have the comfort feature of a shock-proof insole.

Another type is the body boot which has a steady market for oyster fishing, shore fishing, dredging work and by sewage workers who require maximum waterproof protection over their legs and body.

Another type boot is the legging boot, originally developed as a result of requests from seamen for a boot which would slip over leather shoes and that could be easily folded and put in a portfolio or compartment. This offers complete protection up to the knee and is ideal for men with weak arches who prefer wearing their leather shoes. This boot is bought by motorcycle policemen, traffic policemen, policemen on patrol duty, industrial plants, auto owners.

Boots for special purposes include an irrigation boot for irrigation workers, boots for commercial fishermen, and fire-fighter boots in two lengths—short and ¾ storm king. The fire-fighter boots are built for firemen throughout the country, are felt-lined for comfort, have thick cleated outsole for good grip and protection, a white outsole for greater visibility in smoke, a metal or a maple-wood shank which enables a fireman to stand on the rungs of a ladder without undue pressure on the foot. Other features of the fire-fighter boots are that the skirt is three inches higher than the regular storm king giving the fireman extra protection, yet sized so that when *(Continued page 49)*

Typical industrial boots are available in various heights, and may include steel-box safety toes.



Body boots are a combination boot-and-pant with shoulder straps. Protects whole lower half of body.

Top left: Rubber bootees. Top right: Rubber work shoes. Bottom: Rubber pacs. Note safety toes.

Various styles of work rubbers. These are designed for heavy duty industrial and hard outdoor work.

FEATURE

This is the third of a series of three major articles on Foot Protection. The first two articles of this series, discussing electrical hazard shoes and selling safety shoes, appeared in the November and December 1948 issues respectively.

You can see with

PAINTED LIGHT

By RALPH P. EAMES

ARE you afraid of the dark? "No!" is the average person's emphatic reply, and he can be pardoned for a note of sarcasm in his voice. After all, this is the twentieth century. Hobgoblins and witches went out of fashion before the bustle.

But even the most unsuperstitious of us let our instincts give darkness at least grudging respect. We don't go out of our way to be in darkness—that is, unless we are astronomers, thieves, or lovers. We don't make a habit of groping down flights of steps without any light or stumbling blindly over furniture just for the sport of it. On the contrary, such experiences are likely to unhinge both our disposition and language.

Darkness, furthermore, can lead to difficulties more serious than a barked shin, jangled nerves, or an uninhibited oath. It is something to be avoided not only because of the possible discomfort involved, but also because darkness places us in real physical jeopardy. Man is light-adapted. Unlike some of the lesser animals, his visual powers are practically nullified in the absence of light. He has tried to overcome this handicap by flooding his environment with artificial light; but this measure has not been wholly successful. On occasion, the power fails, lines break, bulbs burn out. This is the moment for disaster to strike; someone takes a headlong plunge or wanders inadvertently into dangerous machinery, a panic-stricken crowd stampedes, a fire makes headway while someone frantically tries to locate the extinguishers. The average person is not afraid of the dark, but perhaps he should be.

Man, however, does not have to go on groping around in the dark, playing blindman's buff with his environment. Since it is unlikely that man's eyesight will be improved or that any invention will permit his eyes actually to see in the dark, the only course left is to do something about the environment. The problem could be easily resolved if objects themselves could be made visible without the immediate benefit of any illumination, electric current, or other activating factor. Fantastic as the idea may seem, such a method of visibility in darkness is now possible. It has even been perfected to the extent that some state and city governments are beginning to require that safety signs be of a type which will remain visible for specified lengths of time after the failure of the primary source of illuminating current. Such ordinances should result in the reduction of the hazards to personnel in industry as well as the dangers to individuals in times of emergency at public gatherings.

FEATURE

This is the first of three feature articles concerned with Painting for Safety & Health. The next two articles of the series will be published in the March and April 1949 issues of SAFETY ENGINEERING

Luminescent Pigments

One of the simplest means of making signs remain visible is to use luminescent pigments. These are synthetic inorganic chemicals which will absorb radiant energy and release it as visible light in darkness. Unlike other pigments, they are not intended for merely reflecting light rays. Instead, these pigments transform radiant energy into visible light which is then emitted by the pigments themselves.

Specifically, there are two types of luminescent pigments: fluorescent and phosphorescent. Fluorescent pigments are basically zinc sulfides or combinations of zinc and cadmium sulfides. When they are exposed to invisible ultraviolet light, they absorb the energy and transform it into visible light, with the result that the pigmented surface or object actually glows. There is one factor, however, which rules out fluorescent pigments as being of any great value for safety and emergency purposes. That factor is that the pigment is excited (or glows) only during the actual time that it is exposed to invisible (or "black") light. It requires a source of power which in many cases might be cut off at a time of emergency. During a power failure, fluorescent pigments would be no more visible without the activat-

Caught in the dark? Down to your last match? Let luminescent pigments light your way in such emergencies, for you can see with painted light.

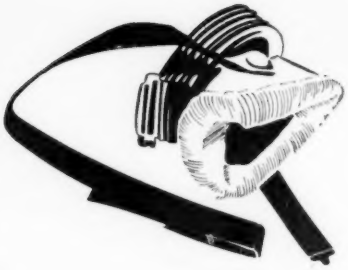
ing "black" light than would an ordinary incandescent or fluorescent lamp. To be effective, the "black" light would have to be connected to a secondary source of power, such as a battery system, which would automatically go into operation at the time of failure of the primary system.

In spite of the fact that fluorescent pigments have this limitation of requiring some power source, they do have important applications for instrument panels and dials, and for advertising and decorative effects. During the last war, the use of invisible short-wave light to excite the fluorescent pigments on dials, charts, and instruments was especially noteworthy. It permitted personnel not only to operate ships and planes under blackout conditions, but also to keep their eyes dark-adapted for best visibility.

Phosphorescent Pigments

A fluorescent pigment might be likened to a sieve, which changes the form of the material poured into it, but which releases this transformed product only so long as the original material continues to flow into the sieve. Closely allied to the fluorescent pigments are the phosphorescent pigments, which might be compared to a funnel instead of a sieve. Here again the entering material undergoes a transformation, but some of the material is held back by the funnel itself and will continue to flow from the funnel for a considerable time after the original material has ceased to enter it. In other words, the energy of an activating light is absorbed and stored up by phosphorescent pigments. That stored-up energy will be emitted as an "afterglow" for some time after the activating light has been removed. In this one characteristic—this ability to glow visibly without benefit of any simultaneous energizing source—lies the answer to many industrial and community problems.

The phosphorescent pigments now available are composed of zinc sulfide, zinc and cadmium sulfides, or calcium and strontium sulfides. In addition to being phosphorescent, these pigments are also fluorescent—that is, they will glow when subjected to "black" light. Their afterglow colors range from orange-yellow through green to various shades of blue. These pigments also vary in both the degree of phosphorescent brightness and the length of time that the afterglow remains visible. Some will emit useful light for thirty minutes, others for as much as ten hours or longer. These variations are basic to the pigments themselves; but other factors also influence the duration and intensity of the afterglow. These factors include: 1. the medium in which the pigment is incorporated, 2. the intensity of the exciting light, 3. the length of time that the pigment is exposed to such light, 4. the temperature, and 5. the size of the pigmented area. In *(To page 50)*



mechanical-filter and chemical-cartridge

- **What types of respirators are available?**
- **When and where should they be worn?**
- **Why is approved equipment important?**
- **How should respirators be maintained?**

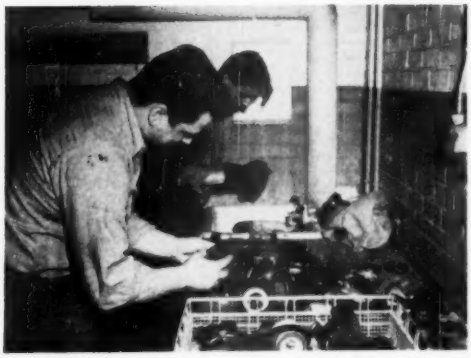


Figure 2. Taking used respirators apart preparatory to cleaning. The man in the background is cleaning respirators that have been worn by spray-painters. These and other very dirty respirators are cleaned in part by hand. Less dirty ones are washed in mechanical dishwasher.

By ALLEN D. BRANDT, D.Sc.,
Industrial Hygiene Engineer, Bethlehem Steel Company

PERMISSIBLE RESPIRATOR
FOR
DUSTS

APPROVAL NO. 2100

ISSUED TO THE
MANUFACTURER'S NAME
Address

Approved for protection against the inhalation of dusts (dispersoids, or particulate matter formed by the disintegration of solid materials by such processes as crushing, grinding and abrading).

The approved assembly consists of: BM 2100 facepiece and BM 2100 filter.

In making renewals or repairs, parts identical with those furnished by the manufacturer under the pertinent approval shall be maintained.

CAUTION

This respirator removes only dispersoids from the air. It gives no protection against gases, vapors or an insufficiency of oxygen.

Follow the manufacturer's instructions for fitting the respirator to the face, for cleaning or changing the filter, for cleaning the respirator, and for caring for it while not in use.

Figure 1. All dust respirator approval label issued by U. S. Bureau of Mines.

ALL respiratory protective devices may be divided in two broad groups, depending upon the nature of their operation. One of these groups includes any device which separates the person's respiratory system from his immediate environment by supplying him with air or oxygen from a container carried by him, or through pipes and hose lines. Such devices protect the wearer against any atmosphere except those containing gases such as hydrogen cyanide that may be absorbed through the skin in harmful quantities. They also furnish protection against atmospheres deficient in oxygen.

The other broad group of respirators, commonly called air-purifying respirators, includes all devices which protect the wearer by filtering most of the harmful air contaminants from the inhaled air. Such protectors are merely barriers between the wearer and his surrounding atmosphere. They include gas mask, mechanical-filter respirators and chemical-cartridge respirators. This discussion will be confined to the last two types which are commonly referred to as routine or nonemergency respirators, as differentiated from oxygen-breathing apparatus and hose masks, which are emergency respirators. Gas masks may be used in either emergency or nonemergency situations.

Mechanical-Filter Respirators

The mechanical-filter respirator, commonly called the dust respirator or dust mask, is the oldest type known. In fact, it was probably the first method ever used to combat occupational diseases. Dust respirators of a sort date back at least as far as the early Christian era, having been described by Pliny the Elder (23-79 A.D.).[1]

In the seventeenth century such protective devices were worn by certain miners according to Agricola.[2] Their real growth, in this country at least, dates from World War I, and it is probably accurate to say that mechanical-filter respirators reached maturity about 1935 when the U. S. Bureau of Mines began testing and approving such devices.[3]

The most common design of mechanical-filter respirator consists of a filter element in the form of discs attached directly to a half-mask

1 Plinius Secundus, C., Historae Naturalis, Lib. 33, sec. 11.

2 Agricola, G., "De Re Metallica," Translation from first Latin Edition of 1556, by H. C. and L. H. Hoover, The Mining Magazine, book 6, page 214, London, 1912.

3 "Procedure for Testing Filter-Type Dust, Fume and Mist Respirators for Permissibility," U. S. Bureau of Mines, Schedule 21, Department of the Interior, Washington, D. C., 1934.

RESPIRATORS

Figure 3. Mechanical cleaning of respiratory parts. The parts of the used respirators are laid out in trays for handling in the mechanical dishwasher. The washer is partly hidden by the man in the picture. It is a modified commercial dishwasher. Dirtiest parts are done by hand.

Figure 4. Reassembling cleaned and dried respirators. After the parts have been cleaned and dried, they are reassembled. All faulty and worn parts are replaced. The man in the foreground is shown inserting a reassembled respirator into a transparent bag for return to the worker.

facepiece in such fashion that the inspired air passes through the filter. The filtering element is usually plain or treated paper or felt. Some designs employ filter bags, or cylindrical filter elements rather than discs. A few respirators of this type have full facepieces, or mouthpieces which may be attached directly to the filter element or indirectly by means of a flexible breathing tube, the filter being located on the chest, on the back, or at the side of the wearer. Most facepieces contain exhalation valves to permit the exhaled air to escape readily from the mask without returning through the filter. This is important for two reasons. First, it reduces the dead air space in the respirator and second, it prevents the moist exhaled air from passing through the filter and altering its filtering characteristics. There are about a dozen different manufacturers of such devices in the United States and probably five times as many designs as manufacturers.

Mechanical-filter respirators operate on the principle of removing some or most of the particulate contaminants from the inhaled air by physical trapping and electrostatic attraction. There is a large variety of forces at work in the removal of dust, fumes, mists or smoke from the air passing through mechanical filters. It is important to remember, however, that *only* particulate matter (dusts, fumes, mists and smoke) are filtered from the air by such respirators; they provide no protection against gases or vapors. In this connection, it is well to bear in mind that the term "fumes" is frequently misused in unscientific articles or newspaper accounts of poisoning. In this discussion, the word "fumes" refers to "solid particles generated by condensation from the gaseous state, generally after volatilization from molten metals, etc."[4] The material supplied to domestic ranges and that discharged by internal combustion engines such as automobiles is a gas, not a fume. It is important to remember, also, that mechanical-filter respirators of any kind remove a certain portion of the particulate matter in the air passing through them, the percentage of removal increasing with the size of the particulate matter and the quality of the filter element. The filtering efficiency or the degree of protection afforded, as well as the resistance to breathing, increases as the filter is used because of the plugging of the filter material with the atmospheric contaminant. The useful cycle of a mechanical-filter respirator is,

[4] "Fundamentals Relating to the Design and Operation of Exhaust Systems," ASA Code Z9, American Standards Association, New York, 1936.

FEATURE

This is the third of a series of three major articles on Respiratory Protection. The first two articles of this series, discussing self-contained breathing apparatus and supplied-air respirators & gas masks, appeared in the December 1948 and January 1949 issues respectively.

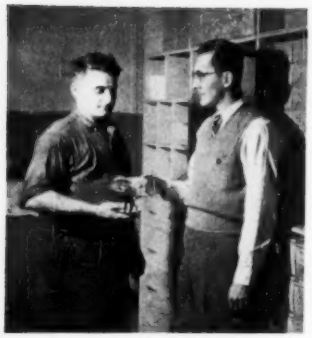


Figure 5. Respirator and parts storage. There is an adequate supply of new respirators and parts in the central service station. The man at the left is a new employee or one who has need for a respirator on a new job. It is here or in classes that the workers are told why they should wear respirators, how respirators function, how they are kept clean and in good operative condition, and how they should be fitted to give protection without undue pressure on the nose or rest of face.

therefore, the period of time it can be used at a given operation before the plugging causes such increase in the resistance to air flow that it makes breathing very uncomfortable or laborious. In general, the plugging characteristics of good quality commercial respirators are such that they may be used at least one day, and frequently longer, for all but extremely dusty operations.

Table 2.
Toxic Dust Respirators

Note: Other respirators which are approved for protection against toxic dusts are listed under All-Dust Respirators (Table 3) and Fume Respirators (Table 4).

	Name of Respirator	Approval Number	Date of Approval
1.	M.S.A. Comfo respirator	2107	Aug. 9, 1935
2.	Pulmosan L-2100 pouch-type filter respirator	2110	July 17, 1936
3.	Willson Rotiform respirator #200L	2123	April 18, 1938
4.	Willson respirator #750L	2125	Oct. 19, 1938
5.	McDonald Dustfoe respirator [1]	2126	March 10, 1939
6.	Willson respirators #5L and #45L	2143	Dec. 19, 1940
7.	A.O. R9100T respirator	2144	May 19, 1941
8.	Hygeia Reef #12 respirator (Hygeia Filtering Corp.)	2145	July 15, 1941

[1] M.S.A. Dustfoe respirator. Extension of approval 2126 issued to Mine Safety Appliances Co., March 10, 1939.

Mechanical-filter respirators may be subdivided conveniently into several types according to their selection and use in industry, and as based on Bureau of Mines classification for testing and approval.[a] These types are:

1. Dust Respirators
   a. Pneumoconiosis-producing and nuisance dusts
   b. Toxic dusts
   c. All dusts

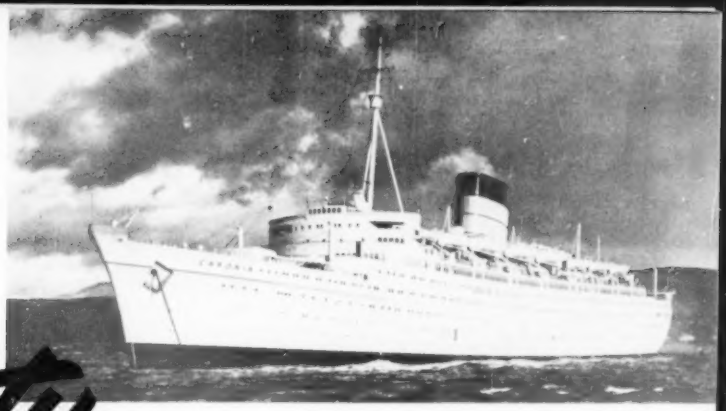
Dust Respirators

The fundamental difference between respirators in the foregoing classifications is one of filtering efficiency. A criterion even more important than filtering efficiency is the absolute amount of the contaminant that remains in the air after it has passed through the filter. Dusts and mists are removed from the air with less difficulty than fumes, owing to the larger average particle size. Toxic dusts are more harmful unit for unit than pneumoconiosis-producing and nuisance dusts. Better filter elements are therefore needed to remove the higher percentages of toxic dusts than of the other types, or, in other words, to allow smaller amounts of toxic dust to pass through the respirator filter. In general, if a respirator affords adequate protection against a certain dust, as evidenced by Bureau of Mines approval for protection against that dust, it is also considered satisfactory for any other dust that is not smaller in particle size and no more harmful in nature than the dust for which it is approved. It follows, therefore, that a respirator approved for silica dust is also approved for all pneumoconiosis-producing and nuisance dusts (See Table 1.); one approved for lead dust is also approved for other toxic or poisonous dusts (See Table 2.); and one approved for both lead and silica dust is adequate for all dusts (See Table 3.). The cautious observer may question the need for both the "toxic dusts" and the "all dusts" classifications since both types afford adequate protection against all dusts. The reason for this breakdown is the difference in resistance to breathing. Because of the higher concentrations of dust against which pneumoconiosis-producing and nuisance dust respirators are commonly used *(Continued on page 32)*

Table 1.
Pneumoconiosis-Producing and Nuisance Dust Respirators

	Name of Respirator	Approval Number	Date of Approval
1.	M.S.A. Comfo respirator *	2101	Jan. 7, 1935
2.	Willson bag respirator #300	2102	Jan. 21, 1935
3.	Willson bag respirator #400	2103	Jan. 21, 1935
4.	Pulmosan M-15 pouch-type filter respirator	2104	Feb. 9, 1935
5.	Biever respirator (Standard Safety Equipment Co.)	2105	March 5, 1935
6.	Willson bag respirator #4	2106	May 27, 1935
7.	Pulmosan M-1100 pouch-type filter respirator	2109	March 23, 1936
8.	Cover #24 Dupor respirator	2111	Sept. 15, 1936
9.	Cesco #90 Healthguard respirator (Chicago Eye Shield)	2113	Dec. 16, 1936
10.	McDonald Dustfoe respirator [1]	2115	Oct. 8, 1937
11.	Willson bag respirator #100	2117	Dec. 27, 1937
12	Willson Rotiform respirator #200	2118	Dec. 30, 1937
13.	Willson respirator #750 *	2119	Jan. 3, 1938
14.	Pulmosan D-4100 Duo-filter respirator	2120	Jan. 12, 1938
15.	A.O. R1000 respirator	2121	Feb. 3, 1938
16.	Hygeia Filto-Ring #28 respirator (Hygeia Filtering Corp.)	2122	March 23, 1938
17.	Cover Dupor Skin-A-Cat respirator #40	2129	July 5, 1939
18.	M.S.A. Comfo respirator *	2130	Aug. 23, 1939
19.	McDonald Dustfoe respirator * [2] *	2132	Aug. 23, 1939
20.	M.S.A. alkali-dust respirator	2136	Dec. 1, 1939
21.	A.O. R9100 respirator	2137	March 6, 1940
22.	Willson respirators #5 * and #45 *	2140	Sept. 28, 1940
23.	DeVilbiss MSD respirator	2141	Oct. 3, 1940
24.	Willson respirator #10	2146	Sept. 11, 1941
25.	McDonald Clear-Vue Dustfoe respirator * [3] *	2147	July 16, 1942
26.	Pulmosan respirator #M-500	2150	Sept. 22, 1944
27.	Cesco respirator #94 (Chicago Eye Shield Co.)	2153	March 23, 1945

* This respirator is also approved for pneumoconiosis-producing, chromic acid, and nuisance mists.
[1] M.S.A. Dustfoe respirator. Extension of approval 2115 issued to Mine Safety Appliances Co., Nov 23, 1937.
[2] M.S.A. Dustfoe respirator. Extension of approval 2132 issued to Mine Safety Appliances Co., Aug 23, 1939.
[3] M.S.A. Clear-Vue Dustfoe respirator. Extension of approval 2147 issued to Mine Safety Appliances Co., July 16, 1942.



Safety GOES TO SEA

If you think safety is a subject that concerns only factory Joe, just bat your eyelashes at the new "Caronia" and see how safety can be glamorous.

By HARRY ARMAND

WITH a great tradition born of generations of safety at sea, it was fitting that designers of the newest Cunard White Star liner "Caronia" chose for the hull exterior shades of green, the traditional color emblem of safety.

Last month a royal welcome awaited the majestic arrival of the "Caronia" as New York sent up a spectacular and rousing salute to the largest liner built in the world since the war. Harbor craft whistles were tied down and towers of water shot to the skies as planes rose and dipped in one giant gesture of greeting suitable for ocean-going royalty.

Introducing a new look in Cunard house colors and departing from the customary black and white, the green-dressed Atlantic cruise ship brought a gasp of admiration to blasé harbor personnel as she rode in on her maiden voyage wearing a gaily-colored tiara of international code flags stretched from stem to stern.

Writers of glamour copy for travel literature were sent scurrying to the nearest typewriter in an almost futile attempt to describe a floating penthouse which strikes a new note in beauty, luxury and safety for passengers and crew.

Until comparatively recent years, fire protection and passenger safety at sea had no place in the descriptive material prepared by ship lines and travel agencies. On the contrary, the travel world shuddered at the mere mention of accident and fire protection on the mistaken premise that it was economically unwise to scare away potential revenue by the hint of an "unpleasantness." Prospective passengers were supposed to take safeguards for granted, and woe betide that misguided publicist who would

Safety details of the Caronia, as shown in the ship's theater, include well distributed sprinkler heads, fire-resistant woods and fabrics, adequate exits, main and auxiliary lighting and public address system.

A separate extinguishing system protects the theater projection booth. Harmless carbon dioxide gas is discharged through nozzles near ceiling by remote control lever just outside door. Note hand extinguisher at right.

In the Caronia's fire station—which is manned 24 hours a day—are the carbon dioxide storage cylinders which supply the extinguishing system protecting all the cargo holds and refrigerated storage spaces. Note the alarm indicator panel.

dare to acknowledge the presence of a hazard or implant the thought of a possible tragedy.

Happily, progressive steamship lines of which Cunard White Star is an outstanding example, operating under foreign and domestic registry, now have seen the wisdom of taking the public into their confidence concerning provisions for safety, fire detection and extinguishment.

With the arrival of its newest queen of beauty, the operators of the "Caronia" point with justifiable pride to the most modern innovations for safeguarding lives as well as a twenty-million-dollar property investment. Protective features, born of wartime experience, have been incorporated in the construction and operation of the vessel.

The "Caronia" was planned entirely on an experimental basis step by step and involved the construction of many types of models. In one phase of the testing, a wax ship replica was towed up and down a tank hundreds of times to simulate sea conditions under varying types of weather.

Following the launching by Britain's heiress-apparent, H.R.H., The Princess Elizabeth, thousands of workmen of all trades began the immense task of completing and fitting out the 715-foot vessel whose 10 decks represent a gross tonnage of 34,183.

Inside the single 46-foot funnel are the smoke uptakes from the four main watertube boilers and two auxiliary boilers, also induced draught fans and wet dust collectors to trap the soot from the boiler smoke by washing it into hoppers for discharge overside below the water-line. The funnel also contains exhaust vents and the main portions of two powerful whistles which can be heard over a distance of several miles.

Safety Features

Ten watertight bulkheads form the main watertight compartments of the vessel above the double bottom which gives a continuous watertight inner "skin" from peak to peak, with forty watertight compartments between the inner and outer bottoms.

Emergency oil lamps are provided in addition to the electric navigating lights. Two separate systems of radar are fitted to the "Caronia". A comprehensive range of radio receivers and transmitters of latest design on short, medium and long waves is a feature of the new Cunarder. The service, both telegraph and telephone, is world wide and available at all times. The communication system, therefore, provides for reliable long-range transmission and reception while cruising in mid-ocean. In addition, extensive public-address equipment for use in making spot announcements to the passengers is installed in a separate room remote from the radio office for added security. Auxiliary radio equipment has been installed as well as emergency radiotelegraph installations in two of the vessel's motor lifeboats; and two portable emergency transmitters and receivers are carried for use in other lifeboats.

Launches and Motor Lifeboats

Seven launchings directly affecting the "Caronia" took place before she entered service: the launching of the ship herself and six others. Each of the six diesel-driven launches, which the ship carries in the largest boat davits ever fitted to a passenger liner, was built on a slipway and launched the same as the mother ship itself. To insure immediate starting of the emergency craft, an electric heater is fitted under the case, adjacent to the engine. The 45-foot boats are designed as combined cruising launches and lifeboats and are fitted with upholstered seats and back rests. Overhead awnings and side curtains give protection from rain, sun-glare and reflection; and the engines are capable of giving fully loaded boats a speed of over 9 knots. Additional liferafts are fitted with lifebuoys, lifejackets, flares, etc., in accordance with specifications of the British Ministry of Transport.

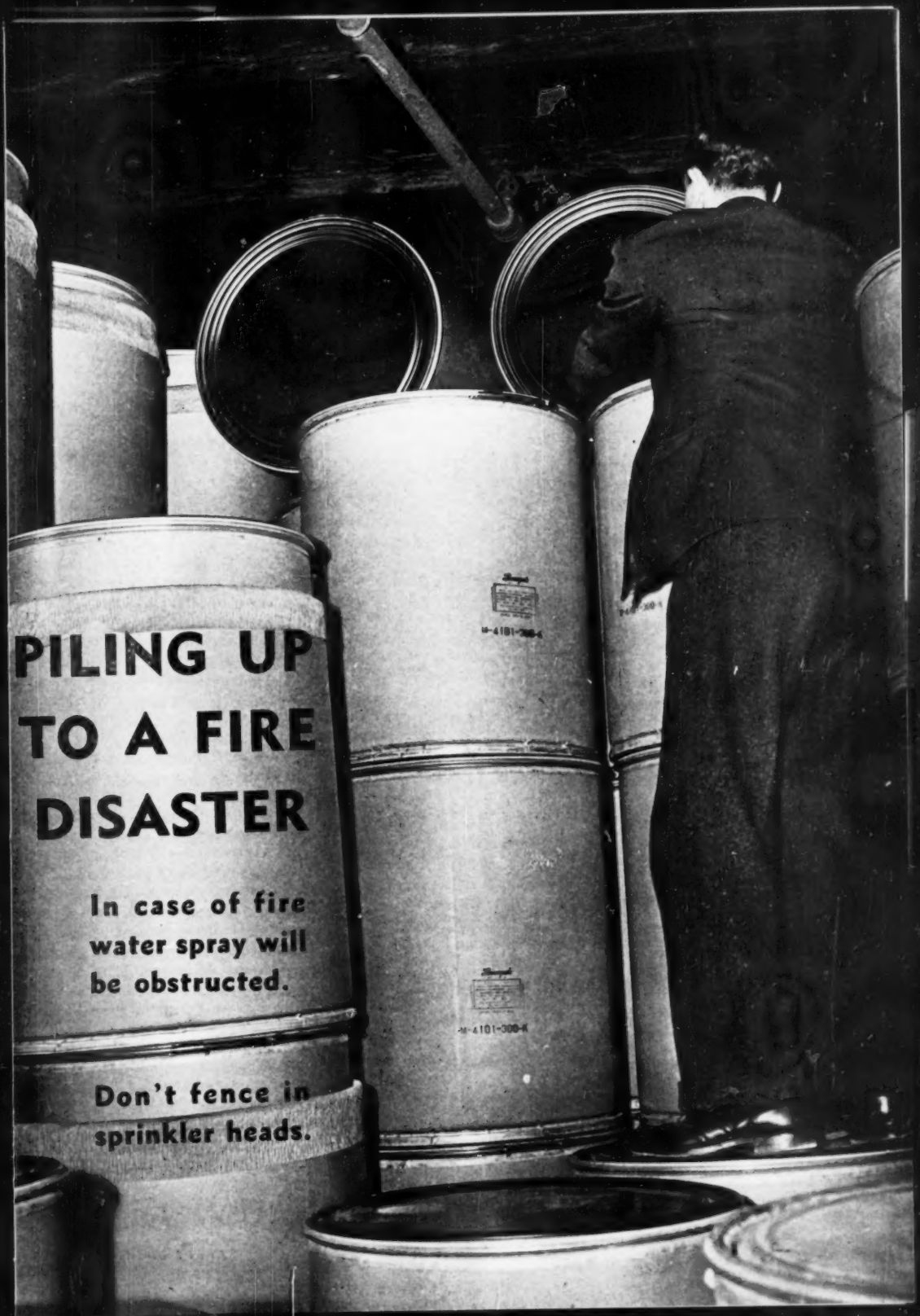
Fire Protection

Precautions taken throughout the "Caronia" to limit the possible spread of fire represent the most modern findings of fire control experts. Facilities include the use of fire-proofed timber, fire-resistant paint, and the liberal use of asbestos as an insulating medium.

Fire-resistant doors of three types have been installed within the vessel. Sliding shutters are installed in openings of public rooms, and, in addition to steel doors on many decks, special smoke

(Continued on page 56)

To protect 19 cargo holds on the Caronia, 28 cylinders each containing 80 pounds of carbon dioxide are manifolded together for discharge in groups. In addition to the extinguishing equipment, the Caronia's fire station has first aid portable extinguishers, sand bin, axes, safety lamps and oxygen respirators for fire fighting.


PILING UP
TO A FIRE
DISASTER
In case of fire
water spray will
be obstructed.
Don't fence in
sprinkler heads.

ASPHALT TILE

. . . . . for safe flooring

Industrial accidents can be lowered by installing floors with high anti-slip ratings. Don't overlook, either, the safety value of color, comfort, and good maintenance.

FEATURE

This is the second of a consecutive series of four major articles dealing with Safe Flooring. The last two features of the series will appear in the March and April issues of SAFETY ENGINEERING.

ACCIDENTAL falls account for approximately one-fifth of all injuries in American industry for which compensation is paid and cause one of every six occupational deaths. This accident cause and methods of overcoming it are of top concern to the safety engineer.

Falling from one level to another causes the majority of serious fall injuries. The New York State Department of Labor finds that appreciable reductions in these accidents can be effected by implanting in the minds of plant personnel the need for greater care in using stairs, ladders, scaffolds and other elevated objects, and by impressing on plant management the necessity for proper construction and maintenance of such facilities.

Unsafe floors that are slippery, damaged or laden with articles left carelessly on them account for an abnormal percentage of falls on the same level, although injury is not usually as serious or severe as falls from one level to another.

Bureau of Standards Floor Report

To determine the anti-slip characteristics of various flooring materials, the U. S. Bureau of Standards has conducted exhaustive tests under varying conditions and embodied its findings in report BMS-100. Highlights include:

1. A person wearing a leather heel is more likely to slip on any surface than one wearing rubber heels.

2. Floor slipperiness can be reduced by roughening the surface, but "rough surfaces are difficult to maintain and keep clean and are thus not desirable for general indoor use."

3. Most accidental falls on floors occur while the victim is walking.

4. Under most conditions, asphalt tile is safer to walk on than any other smooth-surfaced material, provided it has no high-gloss wax finish.

5. The slipping hazard is from 2 to 10 times greater on any wet floor than on a dry surface.

Anti-Slip Comparisons

Table 1 shows the anti-slip coefficients compiled from the Bureau of Standards tests which were conducted on the original surfaces of the various materials with no finish added. The types having the highest number are regarded as the safest.

The Bureau of Standards uses the anti-slip coefficients determined by the tests as yardsticks for rating the various types of flooring. Classed by the Bureau as "poor" for a leather heel is any floor with an anti-slip coefficient of less than .15; for a rubber heel, less than .25. A "fair" rating is given flooring with coefficients of .15 to .30 under a leather heel, and .25 to .40 with rubber. Rated as "good" is the flooring having a coefficient of more than .30 with leather heel and more than .40 with rubber heel.

Table 1.

Type of Floor	Leather Heel				Rubber Heel			
	Dry, Clean	Dry, Dirty	Wet, Clean	Wet, Dirty	Dry, Clean	Dry, Dirty	Wet, Clean	Wet, Dirty
Asphalt Tile	.56	.43	.25	.25	.87	.44	.32	.26
Battleship Linoleum	.43	.40	.19	.22	.80	.44	.18	.18
Cement (wood float)	.44	.47	.40	.40	.66	.58	.55	.55
Ceramic Tile	.40	.40	.15	.07	.73	.44	.26	.22
Cork Tile	.47	.47	.22	.15	.73	.47	.37	.22
Felt Back Linoleum	.40	.44	.21	.15	.77	.47	.33	.22
Magnesite (silica)	.44	.44	.04	.04	.66	.47	.26	.26
Maple	.28	.39	.29	.27	.78	.41	.28	.23
Rubber Mat (emboss.)	.69	.53	.24	.20	.91	.55	.29	.26
Rubber Tile	.33	.40	.18	.18	.77	.44	.22	.33
Terrazzo (marble chip)	.37	.40	.22	.18	.80	.44	.26	.18
White Oak	.26	.41	.36	.28	.79	.45	.39	.27

Color and Floor Safety

The biggest current news in industrial safety is that accidents can be reduced one-third or more by the scientific use of color in a plant. This includes marking hazards with vivid color according to the American Standards Association code planning interior color treatments to lessen fatigue and eyestrain, both of which contribute heavily to accident frequency; and other applications of color. This, according to medical science, is because muscular, mental and nervous activity of an individual is affected by the type of light rays reaching the eyes.

Amazing results achieved by this use of color are evidenced in the report of the wire rope division of the Jones & Laughlin Steel Corporation at Muncy, Pennsylvania,

that scientific use of color has helped cut lost-time accidents by 38% in 3 years.

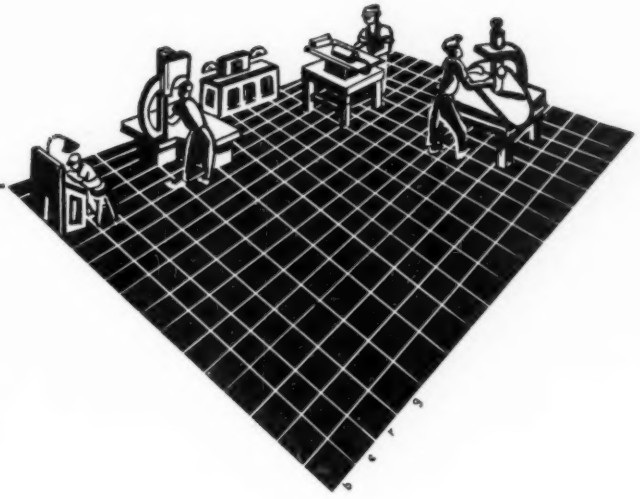
Color Used in Floors

The Gray Research & Development Company at Elmsford, N. Y., reported eye strain and worker fatigue reduced and the number of accidents lowered after application of contrasting colors to working parts of machines and scientific use of color throughout its plant.

Scientific use of color today embraces not only walls, ceilings and machines, but also floors. Increasingly, industrial architects specify asphalt tile, for its extensive range of colors permits any desired color treatment to be developed as a part of the over-all color plan. A group of architects recently surveyed by Architectural Forum named asphalt tile in preference to any other flooring for industrial offices and drafting rooms, and in the survey this material headed the list of smooth-surfaced, resilient flooring for light manufacturing areas, and was rated by the architects as "the nearest approach to a universal, all-purpose flooring."

Color is created by light absorption, and must depend upon light. Therefore it is important to select colors with two considerations: (1) the type of illumination to be used; (2) the effect color will have on factory personnel. Science long ago discovered that colors containing blue are restful; yellow and red tones stimulating; while some other colors irritate and cause actual discomfort.

The ability to look up from close work occasionally without excessive eye adjustment to walls, floor and other surroundings has been proved the best means of reducing eye fatigue and the accompanying nerv-



ASPHALT TILE

Do's . . . . . and . . . . . Dont's

1. DO sweep daily, wash occasionally with mild soap suds in warm water, followed by clear water rinse; dry with a clean mop.	I. DO NOT for washing use detergents not readily soluble in water.
2. DO use only water emulsion wax, applied in very light coats. For high gloss (not recommended from an anti-slip standpoint), buff each wax coat after it is thoroughly dry.	II. DO NOT use cleansers containing gasoline, kerosene, oil, turpentine, acid or alkali.
3. DO wipe up grease on ordinary asphalt tile immediately; use greaseproof tile where oil and grease are present.	III. DO NOT use wax containing solvents.
4. DO equip light chairs, cabinets and the like which are moved occasionally, with metal glides 1 to 2½ inches in diameter with smooth, flat base with edges rounded, affixed to the furniture with a flexible pin.	IV. DO NOT apply lacquer, shellac or other plastic finish.
5. DO use easy-swiveling, easy-rolling casters at least 2 inches in diameter with wide, soft composition tread on desk chairs, typewriter stands and other frequently-moved furniture.	V. DO NOT use abrasive cleansers; when buffing cigarette burns or stubborn stains, confine the buffing to only the area involved.
6. DO place the legs or bases of heavy, seldom-moved furniture, desks, filing cases and similar equipment in broad, flat-base composition cups which are available with openings from 1½ to 2⅝ inches.	VI. DO NOT permit heavy objects with small, sharp legs or bases to stand on asphalt tile.
7. DO be sure that all contact surfaces are smooth, flat and free from irregularities, all edges rounded to prevent cutting if turned on edge.	VII. DO NOT roll heavy objects over asphalt tile unless casters have a broad bearing surface, swivel easily.

Asphalt tile was used for the flooring in this college shoproom. It combines attractiveness with relative non-slipperiness and easy maintenance. Resiliency prevents foot and leg fatigue.

ous strain that helps bring on accidents.

Contrast Eliminates Monotony

Monotony and glare are to be avoided. Contrast should be provided in colors of machines, walls and floors. Light, bright surroundings are best, the experts agree, because eye adjustments between work and surroundings are easier, quicker, less tiring, since fewer eye muscles are brought into play. If machines are dark green, walls pale green and floor gray-green, a minimum of eye adjustment is required. The Distinguished Service Foundation for Optometry says walls should reflect at least half the light reaching them, hence should not be a dark, light-absorbing color.

For cold, sunless areas, stimulating warm colors containing red, yellow or orange are recommended; cool colors of blue, green or gray will tone down excessive brightness in sunny areas, help reduce glare. Floor color, contrasting harmoniously with surroundings, contributes to the general effect, permits eye muscles to relax. Glare need not be present with asphalt tile since its colors remain bright and new with only occasional light waxing which need not be rubbed to a high gloss.

Eyestrain and actual labor at bench or machine are not the only types of fatigue which help cause the $2,600,000,000 annual accident loss to American industry. Merely standing and walking on hard, cold, unyielding floor surfaces adds to workers' weariness, results in foot and leg ailments. Since studies show that accidents rise in direct ratio to body fatigue as well as mental fatigue, the resilient properties of asphalt tile are now receiving consideration equal to that given color in lowering the fatigue factor. Many plants which have installed this flooring around machines where employees stand and walk report immediate decreases in accidents caused by fatigue. Recent development of greaseproof tile has brought increasing demand for resilient floor installations in industrial plants.

Still another contributory cause of fatigue is excessive noise. This is being overcome, especially in light manufacturing plants, by use of acoustical walls and ceilings.

Photograph by courtesy of the Asphalt Tile Institute.

Facts About Asphalt Tile

INSTALLATION—The material is quickly cemented to any sound sub-floor in which all depressions have been filled, boards made rigid; can be walked on immediately.

REPAIR—Since a floor is composed of individual tiles, damage repair is simple and inexpensive by merely replacing damaged tiles.

SAFETY—Asphalt tile anti-slip properties are greater under most conditions than other flooring.

COMFORT—Resiliency of asphalt tile lowers foot and leg fatigue.

FIRE—With asbestos one of its ingredients, asphalt tile resists fire.

WATER—Unaffected by moisture and alkali, asphalt tile is the only smooth-surfaced, resilient flooring recommended to cover concrete in contact with the ground.

STAINS—Common stains cannot penetrate; usually disappear when washed. Stains insoluble in water and cigarette burns vanish when lightly buffed with steel wool.

SIZES—Asphalt tile comes in 1/8 and 3/16-inch thicknesses in these standard sizes: 6x12, 9x9, 12x12 inches; diagonal tile factory-cut from 9x9 and 12x12 sizes; border tile 18x24 inches, width cut on job to fit between field tile and wall.

COLOR—Asphalt tile is made in 12 plain colors, innumerable marbleized effects. Colors cannot wear or wash out as they go clear through each tile.

Fire Contest Winners

IN A competition which included entries from 2928 American and Canadian municipalities, fire departments and fire safety organizations, Oak Ridge, Tenn. was recently named the winner in the 25th annual Fire Prevention Week contest staged jointly by the National Board of Fire Underwriters and the National Fire Protection Association. Second and third places in the judging went to Memphis and Chicago, respectively. Oak Ridge also won the contest in 1947.

Ottawa, Ontario was chosen first place winner among Canadian entries, followed by Arvida, Quebec and Sherbrooke, Quebec.

Fifteen industrial companies were singled out for national honors in the industrial division of the contest. Of these, two located at Oak Ridge tied for first place. These were the Carbide and Carbon Chemical Corporation's K-25 plant and Y-12 plant.

The number of entries, of which 2267 were from American municipalities, 658 from Canada, two from Hawaii and one from Alaska, was the greatest ever to be submitted in the contest, according to T. Alfred Fleming, director of conservation of the National Board of Fire Underwriters, who was chairman of the contest.

Methods of Judging

Judging was done by an international committee of judges, who based their decisions on the scrap books, clippings, photographs, records and motion picture films submitted by the committees. Each exhibit described the inspections, demonstrations and outstanding events of a city's Fire Prevention Week observance last October 3-9 and Spring Clean-Up Week.

Features of the Oak Ridge Fire Prevention Week observance, which won for that city the national prize, were intensive inspections for fire hazards in all dwellings and industrial plants, inspections of fire hydrants, water supplies and alarm systems, drills and practice runs for the fire department, fire fighting demonstrations, special film showings and a city-wide publicity campaign.

The "Chief" takes a breather at Shopton, just west of Ft. Madison, and the first point on the west-bound Santa Fe where train is thoroughly inspected.

Safety Rides the Rails on the Santa Fe

By ALBERT A. MOREY, Vice President,
Marsh & McLennan, Inc., Chicago, Ill.

THIS is the second installment of a two-part story of safety on the Santa Fe Railway. The first part of the article appeared in the January, 1949 issue of SAFETY ENGINEERING.

Part 2: The Unseen Navigator

The people who guide the fast streamliners are the dispatchers—a group of highly trained men who know where their trains are each minute of the long runs. They are truly the navigators of the silver fleet. Too much praise cannot be given to these men for their part in piling up astounding safety records.

Who are these men, and what are some of the things they do?

1. Dispatchers are a group of highly intelligent men well trained in operating rules. They must pass thorough examinations.

2. A detailed record is kept by the dispatcher of each train moving across his territory on what is known as a train sheet. Engine numbers are entered, and if it is a regular train, its number, such as No. 19 for the westbound "Chief" or No. 20 for the eastbound, is marked accordingly. Extra trains are shown as "extra," east or west, using the number of the locomotive.

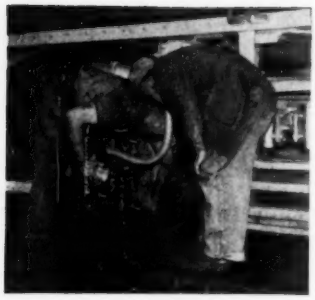
3. Number of cars in the train and tonnage are recorded. Crew members are shown by name, the time called for duty, and whether each has had legal rest, et al.

4. Operators at open offices advise the dispatcher by phone that train has arrived and departed, and this information is entered on the sheet. In this way, an accurate check is maintained for each train at all times.

5. The train dispatcher issues to trains any orders governing their movement and must see that the movement is surrounded with safety at all times.

6. Before any train leaves a terminal, it must first be cleared by the dispatcher. In other words, the dispatcher controls the movement of all trains and must know that each has necessary orders to govern its run. Should there be no orders affecting a train ready to leave a terminal, the dispatcher issues a clearance card which under the rules will permit the train to leave. In the event, it is necessary to issue orders to the train, the numbers of orders are shown on the clearance card.

7. The train dispatcher transmits orders by telephone to an operator at the point where the train is ready to leave and must make complete record of orders thus transmitted. To avoid misunderstanding, the operator after writing down order must read it



Railroad safety is a story of continual checking and rechecking. Here, skilled mechanics at Shopton yard inspect the Chief's engine bearings.

back to the dispatcher who checks its correctness.

8. Dispatcher uses a head phone or loud speaker, and operators "on the line" can speak to him at any time. Also dispatcher can ring any operator in his district to make inquiry about trains, issue orders, et al.

Therefore, it is easy to see that a dispatcher's job on a busy division is a skilled occupation equalled by few. These men take great pride, and well they should, in seeing that the trains go through—safely and on time day in and day out.

Stop, Look and Listen

All of us who ride fast trains and who drive automobiles are interested in the subject of railroad crossings. Many deaths occur each year at these crossings and much property is destroyed. Railroads are taking every measure possible to have the proper protection at each crossing. How is Sante Fe meeting these conditions?

1. All crossings are given some form of protection. This protection is provided in various ways depending on the kind of crossing and amount of traffic. The protection consists of flasher color light signals, automatic crossing gates, manual controlled gates, and crossing flagmen. Less important crossings where traffic is light are protected by warning signs.

2. Much attention has been given and is being given at the moment to grade separation in the form of subways and overpasses, particularly at the more important crossings. These overpasses and underpasses are very expensive and therefore it must necessarily be a long range program.

3. Semi-annual inspection of crossings are conducted by supervisory officers and recommendations are made and acted upon for improving view, adding signal protection, etc.

4. Campaigns are constantly waged by Santa Fe officials to impress the enginemen with the importance of complying with rules requiring whistles and bells to be sounded at all public crossings.

5. Observation tests are made by superintendents, trainmasters and other officers to see that rules and regulations are complied with.

6. Much has been done by railroads, the National Safey Council, insurance companies, and other organizations interested in safety to see that posters pertaining to safety of motorists at grade crossings are widely distributed and prominently displayed. The Santa Fe is a member of the National Safety Council and participates in the "Signs of Life" Program sponsored by that body.

Engineer Lee Lasswell, a veteran of 45 years with Santa Fe who handles the throttle on one of these fast streamliners has stated that one of the most difficult parts of his daily job is watching the motorist as train and car approach the crossing. A constant educational program is necessary to teach the motoring public not to try to "beat the train."

Vim and Vigor

The railroads have always been leaders in keeping their personnel physically fit. How does the Santa Fe do this?

1. Employees, whose duties are connected with the operation of trains must pass a medical examination designed to disclose any physical defect that may impair their ability to function in a normal manner. If disqualifying defects are noted, applicant is not given employment.

2. Employees whose duties are directly connected with the operation of trains (enginemen, conductors, brakemen, firemen, switchmen, etc.) must pass what is known as a Class "A" physical examination. This is more thorough than the examination designed for other employees.

a. Class "A" employees must have 20/20 vision in both eyes, tested separately, without glasses. Standard color tests are given to determine applicant's ability to distinguish colors.

b. Applicants must pass standard hearing, blood pressure and near vision tests.

c. Among the disqualifying defects which are disclosed by rigid examination are mental infirmities, diseases of spinal system, constitutional diseases, diseases of the skin, head, eyes, ears, nose, mouth, neck, chest, abdomen, genito-urinary organs, infectious fevers, etc.

In other words, to pass the required Class "A" examination, the applicant must be in perfect health.

3. Employees must undergo and pass a complete physical re-examination every three years. If any defects are found, they are reported to the employing officer and to the Chief Surgeon for their recommendations. Recommendations may range all the way from actual removal from service to minor surgical and medical attention or more frequent re-examination. It is within the province of the employee's superior to make request for physical re-examination of any employees at any time.

4. A traveling medical car is used to obtain a three year physical re-examination of employees. The car contains necessary equipment for tests and is accompanied by competent physicians. Full records of their findings are reported to the Chief Surgeon and supervisory officers concerned.

Twenty-Four Hour Employees

The Santa Fe is a leader in the safety movement *(To page 28)*

DERMATITIS
CAN HANDCUFF YOUR PRODUCTION!

Safeguard All Hands with **WEST LAN-O-KLEEN HAND CLEANSER**

The shackles of industrial dermatitis can handcuff your workers' manual efficiency—tie up your production schedules—cripple plant morale—and cut sharply into your profits.

One way to remove these costly shackles is to avoid *unsafe* wash-up soaps. Instead, use WEST LAN-O-KLEEN—the mild, safe, quick-acting powdered soap that helps *protect* hands against the effects of industrial irritants. Dispensed through an economical, modern dispenser, WEST LAN-O-KLEEN contains no harsh ingredients or excess alkali to harm sensitive skins. Also, it is prepared of a gentle corn meal base which is "lanolinized"—thus helping to offset loss of natural skin oils.

TRY LAN-O-KLEEN FREE—and SEE!

Fill out the coupon below! It'll bring you a sample of industry-proved WEST LAN-O-KLEEN without obligation. Along with this you'll receive a fact-packed booklet. It'll explain how WEST LAN-O-KLEEN and the modern LAN-O-KLEEN DISPENSER can cut your costs considerably.

SEND FOR FREE SAMPLE

WEST DISINFECTING *Company*

42-16 West Street,
Long Island City 1, N. Y.

WEST DISINFECTING COMPANY
42-16 West Street, Long Island City 1, N. Y.

Gentlemen:
Please send me a free sample carton of LAN-O-KLEEN.

Name _____ Position _____
Company _____
Address _____
City _____ State _____ 19

How Many People Can Read One Copy of a Business Paper?

THE reading of good business papers ought to be an essential part of an alert employee's activities. That is why a great many business-paper subscriptions entered in the names of individuals are paid for by companies.

I don't suppose the day will ever arrive when every employee who should have his own copy of a business paper will get it. But when a single copy is routed to too many individuals, the paper does not get read as thoroughly and as attentively as it deserves. To mention a preposterous case, I know of an instance where one copy is routed to 40 people. This, of course, is exceptional. But only lately I was talking with an agency man who is twelfth on a list of 16 people who get single copies of three business papers.

To me the tendency to put more and more individuals on the routing lists of single copies is an example of unnecessary, undiscriminating and ignorant penny-pinching. If a reader is first on the list, he can't help thinking of those waiting to read the copy in his hands. No man can give proper attention to a magazine if he knows that ten or a dozen other people are waiting for it. If he happens to be the twelfth man on the list of a dozen, by the time the copy gets to him it is dog-eared, clipped and, in his eyes, out of date.

A good business paper is an essential working tool. Few companies would route hammers or saws to 16 or 18 different workmen, but they do that very thing with a copy of a business paper.

In doing it management unintentionally lowers the value of the business paper in the eyes of the employee. "Business-paper reading cannot be so important," the employee thinks, "if I have to wait a couple or three weeks to get my copies."

I think it is time that management took another look at this whole question of business-paper readership. My hunch is that few top executives in the larger companies are really aware of what is occurring and, where they are aware of it, they have not thought the thing through.

Subscription prices being what they are, a year's subscription to a good publication is one of the top bargains of all time. With economic conditions as they are today, business-paper reading is more important to the conduct of the American economy than ever.

Management, therefore, should see not only that every employee who can benefit from a business paper gets his chance to read it. But, also, that he be allowed the time and the leisure to read that business paper thoroughly. In many cases it should see that individual executives and other employees have copies of their own, sent to them under their own names. No executive who insists on his own copy of a magazine should ever wonder why a subordinate is equally anxious to get an individual copy for his exclusive use.

Finally, I think that any executive should look with a questioning eye on the subordinate who shows no interest in any business paper, whether his own copy or a routed copy. The chances are that the employee who is not enough interested to read at least one magazine devoted to the business he is in, or who is so conceited that he thinks he knows all there is to know about that business so he needs no outside help, is the kind of employee who won't be around for long. Or, if he is around, he will be watching keener and more alert men pass him by.

From an editorial in Printer's Ink by C. B. Larrabee, President and Publisher.

Safety On the Santa Fe

(From page 26) —safety of their employees—safety of their passengers—and safety of the general public. Mr. Fred G. Gurley, President, states his position:

"We are continually endeavoring to find ways and means to reduce accidents, and we earnestly solicit any suggestions that any employee may have that he feels will lead to an improvement in our safety performance. In carrying on our safety program we endeavor to keep the safety of our employees foremost in the minds of every supervisor and employee in the service, that we may have full compliance of the very first rule in our Operating Book of Rules, which reads as follows:

"'Safety is of the first importance in the discharge of duty.'"

The Santa Fe has an excellent Accident Prevention Department staffed with capable men. It is composed of a Superintendent of Safety and two assistants. In addition, fourteen safety supervisors are located over the entire system —*all twenty-four hour employees.* These men work closely with the operating personnel.

Four hundred regularly scheduled safety meetings are held over the system each year and the average attendance exceeds 20,000 people. In addition, some 3,000 safety committeemen are appointed from various classes of employees to serve each year. Safety groups have been organized at many points over the system and vie with each other for the best safety record. A mobile visual aid unit equipped with a 16 mm. motion picture projector, public address system, and record player is now in operation showing safety and educational films. Further, to provide incentive, an annual award in the form of a merit plaque is given the winning territory. Awards are presented at a banquet and merit award cards are given to each employee in the winning territory.

There is much more to the Santa Fe Safety Program *(To page 43)*

Visionscope Dramatizes Safety of Full Vision

ONE of the novel and interesting features at the show in Chicago recently was the Visionscope in the booth of the Acme Protection Equipment Co., Chicago gas mask manufacturers. Through this ingenious machine, visitors were given an opportunity to compare the range of vision of the various gas masks on the market. The comparison was made by viewing a panorama painting of Michigan boulevard inside the Visionscope through slides simulating the actual vision areas when viewed through actual gas mask lenses.

Mr. G. M. Glidden, head of the Acme organization, stated that the Visionscope enabled the company to dramatize the vision features of gas masks in a more practical way than was ever possible before.

Oakite Celebrates Fortieth Anniversary

FEBRUARY this year holds particular significance for Oakite Products, Inc., pioneers in the field of industrial cleaning materials and methods. For it marks the completion of Oakite's fortieth year of cooperation with industry on its production and maintenance cleaning procedures.

John A. Carter, General Manager of the Company, in commenting on the increasing utilization of its methods and products by industrial plants, states, "The 40 years of achievement we celebrate this month can be attributed in large measure to the Company's fundamental policy of rendering a service and selling a product on the side. In the years ahead, Oakite will continue to direct its efforts toward developing this service still further, along with the designing of new materials and improved methods for applying them, to the end that cleaning costs in industrial plants and shops may be substantially lowered.

What Happened to Fire Losses During 1948?

FIRES destroyed property and resources with an estimated value of $711,114,000 in the United States during 1948, the greatest destruction by fire in a single year in the history of the nation, it is announced by W. E. Mallalieu, general manager of the National Board of Fire Underwriters.

This record fire loss is 2.7 per cent higher than estimated losses of $692,635,000 incurred during 1947, the previous record year.

Fire destruction in December, 1948, was estimated at $69,397,000, an increase of 31 per cent over losses of $52,949,000 reported in November, 1948, and an increase of 1.5 per cent over losses of $68,361,000 reported in December, 1947.

The record fire losses of 1948 climax several years of steady increases in the level of fire destruction. For example, losses in 1948 were 122 per cent higher than the 1942 figure of $314,849,000, lowest wartime year. For the past 10 years, property and resources valued at an estimated $4,481,812,360 have been destroyed by fire.

Factors Involved

Many reasons have been suggested for the great volume of fire losses, Mr. Mallalieu said. Among the most important are the increased values of property, the greater congestions and concentrations of values, and the higher occupancy rate of buildings.

"This means that every fire during the past few years has been able to destroy more property in dollar value that ever before, and it has taken more dollars to repair or replace property destroyed by fire. Higher property values and price levels have thus made fires more destructive, and have resulted in a record number of conflagrations during the past year.

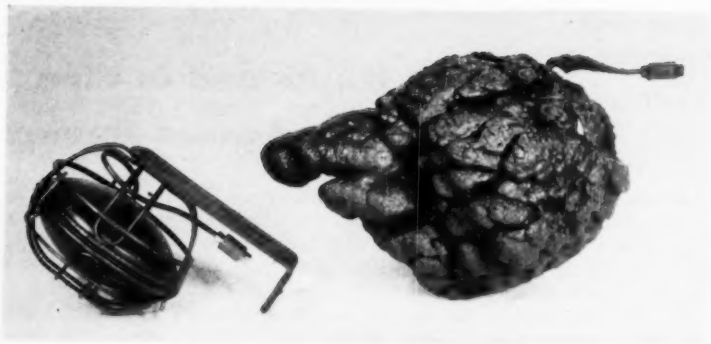
"For these reasons we cannot emphasize too strongly the importance of improving fire protection wherever possible and preventing every fire, no matter how small, from breaking out or getting out of control," Mr. Mallalieu said. "The prime cause of most of the fires is plain carelessness and the misuse of heating and lighting equipments."

Many other factors have contributed to the rising losses, including the rapid obsolescence of heating plants, electrical circuits and buildings due to overloading and overcrowding, use of new industrial processes without proper safeguards, growth of cities faster than their fire departments, and the expansion of industry and commerce in rural areas where fire protection, water supplies and alarm systems are inadequate. During the war years there were shortages of manpower and equipment in a large number of the nation's fire departments, but these lately have been overcome in some places.

Here are the estimated fire losses in the United States during 1948:

January	$63,010,000
February	71,521,000
March	74,236,000
April	63,751,000
May	59,256,000
June	54,706,000
July	50,955,000
August	49,543,000
September	49,945,000
October	51,845,000
November	52,949,000
December	69,397,000
TOTAL	$711,114,000

These reported losses under fire insurance policies include an allowance for uninsured and unreported losses. The figures are based on fire and lightning losses only and do not include losses under any other coverages such as explosion.



"Neglect-osis" Cripples Plant Safety Equipment

Ailing safety devices can put your plant and personnel on the casualty list.

WHAT looks like a biologist's prize specimen or a surgeon's dream in the accompanying picture isn't either one. Not a rare cerebellum, a liver with cirrhosis, nor a gall stone with delusions of grandeur.

It is the sorry result of an occupational disease that attacked a very important piece of safety equipment and, if allowed to go uncorrected, could have brought tragic results. The defunct part succumbed to advance "neglect-osis."

A Kidde maintenance man discovered the oddity on the ceiling of a paint dipping room protected by a built-in automatic carbon dioxide extinguishing system. He knew it was a rate-of-temperature-rise actuator, one of the nerves of the extinguishing system, and immediately replaced it with a new part, locating it where it would not contract the disease.

Then he dug out the clinical records. The actuator was one of three fire detectors mounted above a 30-foot dip tank where small parts were painted. Fire had once broken out in the tank, was quickly extinguished by the automatic system, and saved the customer's plant from a large potential loss.

Some time after this successful operation against fire, the dipping was supplemented by a lacquer spray operation, and an exhaust duct was added to carry off excess spray and fumes. Although the actuators were in plain sight, the duct was placed so that one actuator was between the spray gun and the duct intake. It didn't take long for a hard crust of lacquer to build up on the actuator and put it completely out of business.

Careful in-plant inspection and maintenance should be practiced to assure modification of the fire safety equipment where necessary when process operations are changed.

Picture and story by courtesy of "Kidde Industry," publication of Walter Kidde & Co., Inc.

SAFETY ENGINEER:

Modern paper mill, 2000 employees, requires the services of a top notch safety engineer to re-organize and supervise its safety program.

Excellent opportunity for a man possessing the necessary experience and qualifications and who has been successful in this field.

Give full details such as age, marital status, education, experience, references, salary desired, and enclose photograph. Box E. P., Safety Engineering, 75 Fulton Street, New York 7, N. Y.

New Chemical Data Sheets

THE Manufacturing Chemists' Association has announced the publication of four new chemical safety data sheets and a manual sheet. The safety data sheets are SD–24 on Perchlorethylene, SD–25 on Hydrofluoric Acid, SD–26 on Phosphorus Oxychloride, and SD–27 on Phosphorus Trichloride. The Manual Sheet H–10 covering the handling and discharge of containers for Hydrofluoric Acid, both Aqueous and Anhydrous, replaces previous Manual Sheets H–1, H–2, and TC–5, and is intended to supplement Chemical Safety Data Sheet SD–25.

The new data sheets set forth the important physical and chemical properties of each chemical; the usual shipping containers used for it, and methods for unloading and emptying the containers; container storage and handling; and recommended personal protective equipment. Health hazards and their control are covered authoritatively in a section prepared by the Medical Advisory Committee of the Association.

The Chemical Safety Data Sheets may be obtained at 20 cents per copy and the Manual Sheet H–10 at 25 cents per copy from the Manufacturing Chemists' Association, 246 Woodward Building, Washington 5, D. C. Remittance should be sent with each order.

Only Vul-Cork Soles Have FLOATING POWER

SO LIGHT THEY FLOAT—YET TOUGH FOR MILES MORE WEAR

Amazing ANTI-SLIP* Safety—*Surefooted as a Hound's Paw*—that Workers like to Wear!

*Accident records show that at least 1 out of every 4 occupational accidents is caused by Slips and Falls.

Says Filling Station Attendant • "The Vul-Cork Sole does not soak up oil as other soles do, and wear and stand up better than any sole I've ever used. They keep their shape well too — don't bulge or get ragged."

Says a Large Express Company • "The employees using Vul-Cork Soles report that they have proven valuable as a protection against sliding and slipping on car doorsills, wet cement, modern platforms and car floors."

An Electrical Manufacturer Doesn't Pull His Punches in Speaking • "They are the best non-skid soles we ever had."

About Wearing Qualities a Railroad Company says • "These soles are very good, lasting three times longer than ordinary soles under the same working conditions."

Farmer calls Vul-Cork "A Farm Sole" • "Those Vul-Cork Soles are really a farm sole, they wear farther than any sole I've ever worn, they grip on roofs and climbing so you don't slip, they're really water-proof, and the farm acids that ruin other soles don't seem to affect Vul-Corks the slightest, and I never had anything on my feet so good to keep out cold and heat."

A Milkman Praises Vul-Cork Insulation • "I deliver milk for the.....Milk Co., and I was out in all kinds of weather. They are the best soles I ever wore for comfort in winter and for being cool in summer."

About Comfort an Airline Company says • "..... chief praise for the soles is that they are not soft and springy as crepe, and yet they are easier on the feet."

A Coke Manufacturing Firm Adds "Flexible..... Excellent, easy on our feet and shock absorbing."

Send for list of Safety Shoe manufacturers who make Safety Shoes *REALLY SAFE* against *Slips and Falls* . . . with Vul-Cork Surefooted Soles!

LOOK FOR THIS LABEL → **Vul-Cork** ← ALWAYS ON THE SHANK

IF IT ISN'T LABELED VUL-CORK . . . IT IS NOT AIR-CELL PROCESSED WITH VUL-CORK'S UNIQUE **"FLOATING POWER"**.

CAMBRIDGE Vul-Cork Sure-Footed Soles

The CAMBRIDGE RUBBER COMPANY of CAMBRIDGE MASSACHUSETTS

Please address all correspondence to VUL-CORK SOLE DIVISION Cambridge Rubber Soles Corporation, Tonawanda, N.Y.

RESPIRATORS

(From page 18) (and tested by the Bureaus of Mines), it is not unlikely that a respirator with a high enough filtering efficiency to pass the leakage tests for toxic dusts would increase in resistance beyond the permissible limit when tested against the high concentration of silica dust used for approval testing of pneumoconiosis-producing and nuisance dusts. Consequently a respirator approved for toxic dusts might not pass the breathing resistance requirements of the Bureau's approval tests for pneumoconiosis-producing and nuisance dusts even though it would afford more than adequate protection against such dusts.

Fume Respirators

Mechanical-filter respirators designed for protection against fumes must have much better filter elements than those intended for dusts or mists. Consequently fume respirators will afford excellent protection against dusts. In addition they will probably meet the resistance requirements for dust respirators. Nevertheless, they should not be recommended for use where only dusts are encountered because they cost more and are bulkier than dust respirators. (See Table 4.)

Mist Respirators

There is no significant difference between dust respirators and mist respirators. The term "mist" as used in this paper refers to liquid dispersoids formed by the disintegration of a liquid by such processes as spraying and atomizing. Mist respirators of the mechanical-filter type approved by the Bureau of Mines provide adequate protection against the pneumoconiosis-producing, chromic acid, and nuisance mists (See Table 5). Some of the respirators approved by the Bureau of Mines for dusts and even one approved for fumes are also approved for mists. The Bureau of Mines designates the class (or classes) of materials for which a respirator is approved in its approval label or certificate of approval, which in turn must be reproduced on the container in which the respirator is marketed. Figure 1, for example, illustrates the type of information on the Bureau's approval label for a respirator approved against all dusts. If this respirator were approved for use against mists as well as dusts, it would be so stated on the label.

As mentioned earlier, mechanical-filter respirators are nonemergency devices. They afford no protection against gases and vapors. This fact must be borne in mind when dealing with mists of volatile liquids and with dusts of materials that give off vapors. If significant amounts of vapors are present or formed by the evaporation of a volatile mist that collects on the filter, the mechanical-filter must be supplemented with a suitable chemical filter, or better, a different type of protector (supplied-air respirator) should be used.

Mechanical-filter respirators are not substitutes for other methods of dust, fume, mist and smoke

Table 3.
All-Dust Respirators (Including Toxic Dusts)

Note: Other respirators which are approved for protection against all dusts are listed under Fume Respirators (Table 4).

	Name of Respirator	Approval Number	Date of Approval
1.	Willson bag respirator #400L	2108	Sept. 5, 1935
2.	Pulmosan ML-3100 pouch-type filter respirator	2112	Nov. 30, 1936
3.	Cesco Healthguard #91 respirator (Chicago Eye Shield)	2114	Aug. 6, 1937
4.	Cesco Healthguard #92 respirator (Chicago Eye Shield)	2116	Nov. 8, 1937
5.	Cover Dupor #46 respirator	2124	Oct. 3, 1938
6.	Willson respirator #752L	2127	March 10, 1939
7.	M.S.A. Comfo respirator	2133	Oct. 13, 1939
8.	McDonald Dustfoe respirator [1]	2134	Oct. 13, 1939
9.	A.O. R1000T respirator	2138	March 16, 1940
10.	Cesco Healthguard #94 respirator (Chicago Eye Shield)	2142	Oct. 3, 1940
11.	McDonald Clear-Vue Dustfoe respirator [2]	2148	July 21, 1942
12.	Willson respirator #750D *	2151	Oct. 5, 1944
13.	Willson respirators #5D * and #45D *	2152	Oct. 19, 1944
14.	A.O. R-2000 respirator	2154	Jan. 2, 1947
15.	A.O. R-5000 respirator	2156	June 23, 1948

* This respirator is also approved for pneumoconiosis-producing, chromic acid, and nuisance mists.
[1] M.S.A. Dustfoe respirator. Extension of approval 2134 issued to Mine Safety Appliances Co., Oct. 13, 1939.
[2] M.S.A. Clear-Vue Dustfoe respirator. Extension of approval 2148 issued to Mine Safety Appliances Co., July 21, 1942.

Table 4.
Fume Respirators

	Name of Respirator	Approval Number	Date of Approval
1.	Willson respirator #770	2128	April 15 1939
2.	M.S.A. Comfo respirator	2139	March 27, 1940
3.	Willson respirators #570 * and #780 *	2149	Aug. 7, 1942
4.	Willson WHG-DFM respirator *	2155	March 1, 1948
5.	Willson 750F respirator	2157	Aug. 12, 1948

* This respirator is also approved for all dusts and for pneumoconiosis-producing, chromic acid, and nuisance mists.

Table 5.
Mist Respirators (Pneumoconiosis-Producing, Chromic Acid, and Nuisance Mists)

	Name of Respirator	Approval Number	Date of Approval
1.	M.S.A. Comfo respirator	2101	Jan. 7, 1935
2.	Willson respirator #750	2119	Jan. 3, 1938
3.	M.S.A. Comfo respirator	2130	Aug. 23, 1939
4.	McDonald Dustfoe respirator [1]	2132	Aug. 23, 1939
5.	Willson respirators #5 and #45	2140	Sept. 28, 1940
6.	McDonald Clear-Vue Dustfoe respirator [2]	2147	July 16, 1942
7.	Willson respirators #570 and #780	2149	Aug. 7, 1942
8.	Willson respirator #750D	2151	Oct. 5, 1944
9.	Willson respirators #5D and #45D	2152	Oct. 19, 1944
10.	Willson WHG-DFM respirator	2155	March 1, 1948

[1] M.S.A. Dustfoe respirator. Extension of approval 2132 issued to Mine Safety Appliances Co., Aug. 23, 1939.
[2] M.S.A. Clear-Vue Dustfoe respirator. Extension of approval 2147 issued to Mine Safety Appliances Co., July, 16, 1942.

control and should not be so used. They have a valid and logical place in the whole broad scheme of industrial hygiene. Nevertheless, because of their ready availability, their relatively low cost, and the ignorance of dust control procedures in general, mechanical-filter respirators are sometimes used at operations where better and more positive control measures should be used.[5] They are suitable for, and used extensively on, jobs such as paint chipping; handling used storage battery plates; foundry shakeout and core knockout; cleaning unusual types and sizes of steel castings by chipping; grinding and handling all types of dusty materials; housecleaning and maintenance work; ash handling; intermittent welding of galvanized iron; cleaning and maintaining processing equipment; intermittent grinding and drilling operations; and handling poisonous dusts and sprays as insecticides and fungicides. Since there is a certain amount of discomfort associated with the wearing of respirators continuously or for long periods of time, they are best suited only for short intermittent exposures.

According to the Sept. 1948 report of the Bureau of Mines,[6] 30 mechanical-filter respirators have been approved for pneumoconiosis-producing and nuisance dusts 8 of which are also approved for pneumoconiosis-producing, chromic acid, and nuisance mists. Nine devices have been approved for toxic dusts and 17 for all dusts, two of the latter group carrying approval for mists as well. Only five respirators have been approved for fumes, and two of these are approved for all dusts and for mists. It is apparent, therefore, that there is a large variety of good quality mechanical-filter respirators on the market to choose from for any and all situations

(Continued on next page)

[5] Brandt, A. D., "Industrial Health Engineering," John Wiley and Sons, Inc., New York, 1947.

[6] Schrenk, H. H., "List of Respiratory Protective Devices Approved by the Bureau of Mines," Information Circular 7444, Department of the Interior, Washington, D. C., 1948.

The Greatest Advancement in Hand Soap!

* ANTISEPTIC

Lanelle

U. S. Patent Pend.
U. S. Reg. Pend.

POWDERED HAND SOAP

Antiseptic Lanelle is a great discovery which actually kills germs on contact. Its powerful kill action is especially deadly against common skin infection-spreading germs. Antiseptic Lanelle is non-poisonous and non-skin irritating.

Antiseptic Lanelle contains lanolin—Plus another wonderful agent, which greatly activates the lanolin, and also helps soothe dry, irritated skin. "Lanolin Plus" offers unmatched skin conditioning action.

Antiseptic Lanelle goes far beyond the capabilities of all regular hand soaps. Antiseptic Lanelle removes the most stubborn grime, dirt, grease, paint, ink, etc., and leaves the hands really clean, conditioned, and protected against infection and disease. Antiseptic Lanelle is as mild and neutral as the finest facial toilet soaps. Here for the first time is the long awaited discovery which not only cleans hands safely, but actually protects against serious skin disease and infection.

Antiseptic Lanelle's germicidal, bacteriostatic, non-poisonous, and non-skin irritating values have been proven by unbiased tests made in America's largest testing laboratories.

Write us at once for full details and learn how you can enjoy maximum protection against disease, infection, and dermatitis in your plant with this tremendous discovery, Antiseptic Lanelle Powdered Hand Soap.

SANITARY SOAP COMPANY

Since 1921

104 RAILROAD AVE. PATERSON 3, N. J.

FEW TRUCK FIRES BECOME "TOTAL LOSSES" UNLESS THE FUEL SUPPLY IS INVOLVED!

AMERICAN SAFETY TANKS
have exclusive safety features
NOT found elsewhere

American Safety Tank Co.
UNDERWRITERS LABORATORIES, INC., A. U., 1302
U. S. PAT. NOS. 2090197 & 2268697
KANSAS CITY 8, MISSOURI, U. S. A.

requiring protective devices of this kind.

Chemical-Cartridge Respirators

Chemical-cartridge respirators constitute one sub-division of the larger group of respirators known as chemical-filter respirators. The larger group also includes gas masks, which will not be covered in this article. Devices of this kind have been in common use for many years. The market for them is much smaller than for mechanical-filter respirators, and they play a much less important role in industrial hygiene than do dust, fume and mist protectors. The first Bureau of Mines approval schedule for chemical-cartridge respirators was issued late in 1944[7] and the first respirator of this type was approved in June 1945.

Chemical-cartridge respirators usually consist of a small cartridge-like filter (or filters) attached directly to, and carried by, a facepiece of half-mask design. Except for the filters, such respirators are very similar to the common mechanical-filter respirators in design and appearance. Sometimes full-mask facepieces are used and in other instances there is a mouthpiece attached directly to the cartridge and a wire clip for closing the nose. Notable among the mouthpiece type is the so-called "carbon monoxide self-rescuer" which is used widely in "gassy" mines and has saved many lives.

Chemical-cartridge respirators may be thought of as low-capacity or junior-size gas masks. The total chemical in the filter or filters is usually in the order of 100 to 200 cubic centimeters, as compared with 600 to 2000 cubic centimeters for gas masks. They are designed and intended for the nonemergency use in atmospheres which workmen may breathe without protection but which will either produce discomfort (irritation) or a chronic type of affection or poisoning after repeated exposures of several hours daily. While not intended for work of a general emergency character, the small size of these devices makes them convenient for carrying in the pocket or hanging from the neck or clothing of workmen while not in use. From this position they are readily available, and permit making rapid emergency shut-offs of equipment and escape from contaminated atmospheres.

There are three common kinds of chemical-cartridge respirators on the market, according to the type of gaseous contaminants against which they are designed to give protection. Actually the respirators are alike except for the chemical filters which are detachable from the masks. Filters are available for protection against (1) organic vapors, (2) acid gases, and

[7] "Procedure for Testing Nonemergency Gas Respirators (Chemical-Cartridge Respirators) for Permissibility," U. S. Bureau of Mines, Schedule 23, Department of the Interior, Washington, D. C., 1944.

AMAZING LIGHTNESS

MAGCOA DOCKBOARDS

...made of Magnesium

MAGCOA Dockboards made of magnesium, the "miracle metal", can be handled by one man without the aid of truck, chain or hoist. They weigh less than a third as much as steel boards of comparable size and strength, and are reinforced like a bridge to carry extremely heavy loads. Their lighter weight speeds up loading and unloading operations . . . cuts down danger of hernia and mashed feet or hands. Non-sparking magnesium eliminates explosion hazard, too. Every MAGCOA Dockboard is designed to the particular requirements of your docks. Write us for further information.

If lightweight magnesium is applicable to any of your products, our facilities warrant your serious consideration.

Our Materials Handling Line Includes MAGCOA Hand Trucks, Barrel Skids and Grain Shovels

Made of Magnesium

MAGNESIUM COMPANY
OF AMERICA
EAST CHICAGO, INDIANA

EASTERN DIVISION—30 Rockefeller Plaza, New York 20, N. Y.
WESTERN DIVISION—831 S. Flower Street, Los Angeles 14, Calif.

(3) combinations of these. The more common chemicals are activated carbon for organic vapors and "soda lime" for acid gases, a mixture serving for the combination filters. As a general rule such respirators are adequate for only relatively low concentrations of gaseous contaminants, not more than 0.1% by volume. However, they will protect against as much as 0.5% for very short exposures. Furthermore, the life of the respirators is not long when used at peak capacity, because of the small amount of chemical in the filters.

One of the common uses of these devices is protection from the vapors of solvents encountered during operations such as spray coating, degreasing, dry cleaning, and rubber cement applications. They also provide protection from low concentrations of acid gases as in smelting of sulfide ores and in many chemical processes where contact with small amounts of harmful gases and vapors is practically unavoidable. As with mechanical-filter respirators, these respirators should not be used in place of other more appropriate control measures, but rather as adjuncts thereto. They are, however, of great value and usefulness for intermittent and unexpected exposures to objectionable concentrations of gaseous contaminants.

There are about seven different manufacturers of chemical-cartridge respirators in the United States, and probably three times this number of styles of such devices on the market. As of Sept. 1948, only four had been approved by the U. S. Bureau of Mines for protection against organic vapors (See Table 6). No approval schedule has been prepared as yet by the Bureau for chemical-cartridge respirators designed for protection against acid gases.

Combination Respirators

A few words may be in order regarding respirators with combination dust and gas filters. All chemical cartridge filters remove some dust from the air passing through them, but not enough to be significant. The retaining screens at both ends of the cartridges have some filtering ability for dusts and, in addition, some of the dust may adhere to the chemical in the filter. This total dust-filtering capacity of most chemical-cartridge filters

Table 6.
Chemical Cartridge Respirators (Organic Vapors)

These nonemergency respirators are approved for protection against atmospheres not immediately dangerous to life or containing not more than one-tenth (0.1) percent organic vapors by volume.

Name of Respirator	Approval Number	Date of Approval
1. M.S.A. Twin Cartridge type respirator, G.M.A.[1] . . .	2301	June 4, 1945
2. Willson #701 Chemical Cartridge respirator	2302	Aug. 27, 1945
3. Willson #731 Chemical Cartridge respirator	2303	July 30, 1946

[1] Binks Twin Cartridge respirator, type #8. Extension of approval 2301 issued to Binks Manufacturing Co., June 18, 1948.

RESTORES YOUR FLOORS

Super
SHINE-ALL

Serves the three fold purpose of Cleaning, Polishing and Preserving the surface. Safe for all types of floors and woodwork. A Neutral, liquid chemical cleaner dissolves grime and dirt. Efficient and Economical. Not being a soap or powder it does not have to be rinsed. Has stood the Test of Time for almost Half A Century.

There is a trained Hillyard "Maintaineer" in your vicinity. Call, write or wire for his advice on any floor problems. No obligation.

HILLYARD SALES COMPANIES

470 Alabama St., San Francisco 10, Calif. DISTRIBUTORS **HILLYARD CHEMICAL CO. ST. JOSEPH, MO.** BRANCHES IN PRINCIPAL CITIES 1947 BROADWAY, NEW YORK 23, N. Y.

is too small to be adequate if the atmosphere contains much dust or mist. Additional protection against dusts and mists may be obtained by including an extra disc of paper or felt in front of the chemical cartridge. Most manufacturers market such filters. The filters do not remove a very high percentage of particulate matter, but do improve the dust filtering characteristics of the respirator. The use of such additional dust and mist filters will void the Bureau of Mines approval for the respirator unless it has been so approved, in which case the approval label or instructions for use will contain confirming information.

Bureau of Mines Approval

The U. S. Bureau of Mines approves certain types of respiratory protective devices if they pass the tests specified in their approval schedules. This service by the Bureau was started about 1920 and the first type of device for which an approval schedule was prepared was the self-contained breathing apparatus. The service was extended to mechanical-filter respirators in 1934 and to chemical-cartridge respirators in 1944.

Bureau of Mines approval testing of respirators has been of tremendous help to the wearer; to industrial management; to safety, medical, and industrial hygiene personnel; and to manufacturers of such equipment. Anyone who was active in this work prior to 1935 can well remember the rapid improvement in the quality of mechanical-filter respirators as a class during the two or three years following the issue of the approval schedule for such respirators.

Bureau of Mines approval tests are very thorough as is evident from a study of any of the approval schedules.[3, 7] Filtering adequacy is determined by actual tests against one or more concentrations of one or more types of contaminants for which approval is being considered. The fit or tightness of the mask on the face is given special attention because any leakage between the face and the mask permits unfiltered air to enter the respirator. In addition, other items such as comfort, practicability, ruggedness, resistance to breathing before and after testing, and suitability of construction materials are considered. After a respirator has passed all the tests required by the Bureau, the manufacturer is requested to prepare and submit for approval a thorough but concise list of "instructions for use" which is to be reproduced in or on the container in which the approved device is to be marketed. This list includes step-by-step instructions for fitting the respirator to the wearer and detailed information on the use and maintenance of it. All in all, approval testing by the Bureau has done much to improve the quality of protective devices and to take the

(To page 38)

War-Surplus Extinguishers May Be No Bargain

REPORTS have come to the attention of the National Board of Fire Underwriters which indicate that there is much confusion and ignorance of the dangers involved and misunderstanding of the nature, safety, acceptability, and applicability of war-surplus carbon dioxide extinguishers, carbon dioxide compressed gas cylinders, valves, etc., and compressed gas containers for conversion into fire extinguishers. There have been a number of reports of accidents and at least one on record of a very serious nature, resulting from the use of sub-standard extinguisher assemblies. They have also received numerous inquiries concerning the acceptability and applicability of such extinguishers or conversions. These inquiries indicate considerable interest and concern throughout the fire prevention and protection industry.

It is fundamental that persons contemplating the purchase of such equipment should at the outset request information from reliable and experienced people or companies who are familiar with the subject and who are the manufacturers of the equipment involved. To proceed without this advice is both unwise and dangerous.

Some of the war-surplus, hand carbon dioxide extinguishers—and these were specifically designed for military use—which are being offered for sale by various and sundry concerns may be similar to extinguishers which have been labeled by Underwriters' Laboratories, Inc., but even these devices, because of special design, wire winding, age since their date of test manufacture, and the Interstate Commerce Commission requirements for periodic retesting, should be judged with caution. Expert advice should be obtained before considering their use.

Make-Shift Parts

Carbon dioxide, a valve, a cylinder, and some make-shift parts do not make a fire extinguisher. Quite to the contrary—they may make a very dangerous article, unless they, with other special nozzles and appurtenances, are engineered, designed and assembled into an effective unit by people skilled in the art.

There is particular danger in the use of life raft inflation cylinders and valve equipment which uses carbon dioxide, since such equipment was never designed or built for fire extinguishing, and its use for fire extinguishing might actually spread the fire and otherwise be dangerous. Light weight oxygen cylinders and the valves used for supplying oxygen to airplane crews during the War is not suitable apparatus for carbon dioxide for fire extinguishing purposes and may be even more dangerous and unsuited than the life raft apparatus. Carbon dioxide system units built and used during the War in special engineered fire extinguishing systems for airplanes, *(To page 72)*

SMOKE TOXIC FUMES

Scott Air-Pak can "lick" your breathing hazards . . . and reduce maintenance costs in toxic areas*

GASES

*Over 7,000 men are today doing maintenance, inspection and emergency work in TOXIC atmospheres, fully and comfortably protected by various types of Scott AIR-PAK.

Thousands of plants using Scott *Air-Pak* enthusiastically praise its "safety with economy." *Blast Furnace*—"Nothing better for maintenance work in toxic areas"; *Chemical Plant* —"Our men quickly cleaned up a bad spill, wearing *Air-Pak*"; *Rubber Manufacturer* —"Ideal for combating breathing emergencies"— these are only a few typical comments.

Scott *Air-Paks* are used throughout industry in heat, smoke, toxic gases and oxygen-deficient atmospheres. They're light . . . comfortable . . . instantly ready!

Scott *Air-Pak* models for any need include Back-Pak—Sling-Pak—and Extension Hose Assembly, which permits any number of men to work safely for unlimited periods, several hundred feet from pure air, if necessary.

Scott Air-Pak Sling-Pak (above)—15 minutes duration at extreme exertion. Weight as worn, 19½ lbs.

Write for FREE Booklet!

Get complete data on the Scott Air-Pak, and FREE DEMONSTRATION. Write for *Bulletin 510* and name of nearest distributor . . . today!

ESTABLISHED IN 1932 Scott FOR SAFETY—FOR SERVICE

SAFETY EQUIPMENT DIVISION

SCOTT AVIATION CORP.

217 ERIE ST., LANCASTER, N. Y.

Genuine
PLY-GARB
VINYLITE
PLASTIC
Protective Clothing

ACID, CAUSTIC, WATERPROOF FLAME RESISTANT

Made of top quality materials to our own closely controlled formula, PLY-GARB is longer wearing than you ever believed possible. It's really tough—has considerably better resistance to abrasion, too, than other protective clothing. Available in a variety of weights to provide just the degree of protection you need.

Guaranteed
NOT TO CRACK OR PEEL

Because we use no cheap or reclaimed materials in the manufacture of PLY-GARB, we can guarantee satisfaction on your job.

Beats Rubber EVERY WAY

Weighs one-quarter as much, will last four times as long; yet the initial cost is lower.

WORKERS PREFER PLY-GARB

It's lighter weight and proportioned fit make PLY-GARB garments more comfortable to wear. Employee satisfaction means a great deal, too, because of less inclination to slight the use of protective clothing.

Full Line

APRONS	OVERALLS	SUITS
JACKETS	SLACKS	JUMPERS
SLEEVES	COATS	COVERALLS
HATS	LEGGINGS	CAPES

Write – for complete catalog

Manufacturers of PLY Skin Protective Creams and PLYGLOVS (Plastic Coated)

THE
MILBURN Co.
3224 E. Woodbridge, Detroit 7, Mich.

RESPIRATORS

(From page 36) guesswork out of respirator selection, use and maintenance.

Selection, Use and Maintenance

Most of the principles governing the selection and use of mechanical-filter and chemical-cartridge respirators were covered earlier. A few additional suggestions in this connection appear to be in order.

1. Select only respirators approved by the Bureau of Mines, if available. (No chemical-cartridge respirator has been approved for protection against acid gases.) In addition to the large number of approved mechanical-filter respirators on the market, there are many devices of this type that have not been approved. While it is possible that some of those not approved could pass the approval tests if submitted, this is not very probable. However, there are many places in industry where a much lower degree of protection is needed than is afforded by approved devices. After all, the concentrations of dust used in the Bureau's tests are quite high and for situations where much lower dust concentrations are encountered, perhaps even harmless dust such as ashes—a less efficient respirator than one approved by the Bureau might be satisfactory. Yet, how can we know (a) what the dust concentration is, (b) what the filtering efficiency of an unapproved respirator is, and (c) in many instances, what harmful ingredients may be in the dust? Therefore, the only sound policy is to select only approved respirators because by so doing one knows that the protection afforded the wearer is adequate. With the advances made in respirator comfort and efficiency since 1935, there is little excuse for recommending an unapproved respirator if devices approved for the type of contaminants in question are available.

2. Do not use respirators where other control measures are practicable. Respirators are adjuncts to, not substitutes for, other methods of control.

3. Select the proper type of respirator for the job. The Bureau approval label will state the type (or types) of contaminants against which the device will give adequate protection.

4. Fit the respirator carefully to the face of the wearer. Your job is not done when you hand a worker a good respirator and tell him to wear it. Someone who knows how must explain the reason for wearing the respirator and how it works, and then fit it to the man who is supposed to wear it.

5. Give each worker a clean, well-kept, properly-functioning respirator at the beginning of each work shift. It is difficult enough to get workers to wear clean, pleasant-smelling respirators, but it is downright impossible to get them to wear dirty, foul-smelling devices. The respirator maintenance program frequently spells the difference between a successful and an unsuccessful respirator-wearing campaign.

The most successful, if indeed not the only successful, maintenance program is that in which all respirators are cleaned and serviced daily by designated and trained men at one or more stations equipped for this purpose. If the respirators are serviced during an off-shift, one respirator per person will suffice, but the more common arrangement is to provide each worker who requires such protection with two respirators. It is desirable to identify each respirator in some fashion so that the workers always receive the respirators assigned to them. This is not imperative since the masks are cleaned thoroughly, but it is good psychology to do so. All used respirators are collected at the end of the work shift and taken to the servicing station or center for cleaning, inspection and repairs, if need. They are then taken apart as completely as necessary to accomplish good cleaning and inspection. The cleaning is done manually or by

Timber Dangers

WAR veterans employed in the woods and sawmills are confronted with greater dangers than at the battle fronts, according to the December issue of the California Safety News, published by the Department of Industrial Relations. According to the experts, lumbering and logging is the most deadly industry in the state. One in five of these employees was disabled last year and one in 553 was killed. These experts also state that most of these casualties could have been avoided, if the present provisions of the State Safety Orders had been applied and enforced by the smaller operators in the woods.

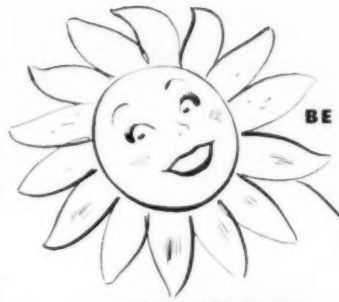
To prove their contention, they point out that the steel and cement industries, formerly among the worst, now rate the safest of occupations. The frequency of accidents in these two groups for last year, was one tenth of that of wood workers. This reduction in accidents was obtained by a nation-wide accident prevention campaign conducted within the industries.

Statistics issued by the Division of Labor Statistics and Research show that out of the 34,000 men employed in cutting and processing lumber, 6,456 were disabled and 69 killed. The principal causes of these injuries and deaths were the improper use and the unsafe condition of such tools as chain saws and drag saws. The most serious accidents in the mills originated from the large rip and slash saws, where arms and legs were amputated and several men were cut in half. Falling logs in the woods and from trucks also claimed a high toll of casualties.

Merrill Brothers Co. Appoints H. L. Franks Director of Sales

IN LINE with their expanding sales program, Merrill Brothers of Maspeth, N. Y., makers of fine forgings since 1866, have just announced the appointment of Howard L. Franks as Director of Sales for the company. Mr. Franks is an active member of the American Society for Metals. He brings to his new position a broad experience in the steel and metal working industry and a vast knowledge of product production and materials handling problems confronting manufacturers in all types of industry.

With Mr. Franks in charge of all sales activities, the complete facilities of the long established Merrill Brothers drop forged plant and the "know how" gained through three generations of one-family experience and management will now be made available to a larger number of manufacturers. Also to be broadened is the sales program on the now famous line of Merrill Brothers Special Production Tools: clamps, drum openers, barrel lifters, and all production time-saving tools in the Merrill line.



BE FRESH . . . STAY FRESH

wear a DUPOR AUTOMATIC

Water Cooled Respirator

For years a prime favorite of respirator users. Sponge filter saturated in water provides moist air — cool, comfortable breathing. Keeps out dust, fumes, smoke, paint spray. Face mask is of soft white rubber. Maximum visibility. Automatic valve exhausts breathed air instantly. Wear while paint spraying, or as protection against gases, dusts, smoke, fumes.

Sample sent $1.65 pp

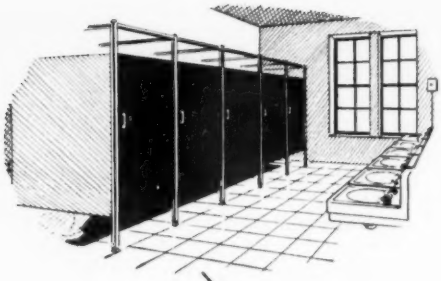
wear Cover's FOG-PROOF GOGGLES

Famous "Nod & Shake" Type

Used by thousands, for years, to protect eyes against paint spray, gases, dusts, fumes, smoke. Can be worn with any make respirator. Frames are of soft, pliable rubber that gives air-tight fit on any shape face. A few drops of water placed in patented groove keeps fog from forming on inside of single lenses. An easy nod and shake of the head keeps lenses clear indefinitely.

Sample sent $1.65 pp

H. S. COVER, South Bend, Ind.



Systematized Sanitation

for your entire plant

- Labor-saving methods
- Lower housekeeping costs
- Better results with your personnel
- Fitted to your own needs
- 30 years proved performance
- Integrity in products and service
- Guaranteed satisfaction

Write today for booklet about this simple, individualized plan which enables your present personnel to do more tasks—better!

The GERSON-STEWART Corp.

LISBON ROAD · CLEVELAND, OHIO

Safety Course at Fairleigh Dickinson College

THE appointment of August G. Bungenstock, to the faculty of Fairleigh Dickinson College, Rutherford, N. J. has been announced by Dr. Peter Sammartino, president of the college. His class in industrial safety which is scheduled for Friday evenings met for the first time on February 4.

Mr. Bungenstock is a graduate of the University of Cincinnati. From 1921 to 1930 he was telephone engineer at the Western Electric Company; in 1930 he was appointed director of safety with the same organization, a post which he still holds. Since 1941 he has been an instructor at Rutgers University and New York University teaching safety engineering, accident prevention, and industrial hygiene.

Mr. Bungenstock is a member of the Newark, Hudson County, and Kearny Safety Councils; chairman of the industrial committee of the Newark Safety Council; member of the American Society of Safety Engineers and the American Industrial Hygiene Association; and vice-chairman for northern New Jersey of the New Jersey State Industrial Safety Council. He has had various safety articles published in *Safety Engineering, National Safety News, Factory Engineering,* and *Occupational Hazards.*

Respirators

(From page 38) machine, using hot water and suitable soap or soap substitute, the parts are then rinsed and hung up or laid out to dry. Drying machines are sometimes used. After all parts are completely dry, they are inspected and the respirators are re-assembled, using new parts where required. In some plants where only respirators using inexpensive "throw away" type filter discs are in service, the worn filters are replaced by new ones every time the respirators are cleaned. This may be a needlessly expensive procedure in many plants where the dust concentrations encountered are not heavy. A suitable marking system, or even resistance testing equipment, could be employed to permit reusing the filters until the resistance becomes excessive. The serviced respirators are placed in individual containers such as paper or transparent plastic bags, or boxes, and returned to the proper workrooms for distribution to the workers at the beginning of the shift. It is desirable to disinfect the masks about once a week. After cleaning, some industries spray the masks with a pleasant-smelling material to get rid of the rubber odor of the mask, or any odor of soap or disinfectant that may remain. This is done with a small atomizer, and is helpful in overcoming objections to the other odors. Figures 2 to 5 inclusive illustrate the operation of the respirator-service center at one plant.

There are, of course, many different ways in which the cleaning and disinfecting may be accomplished, any one of which will give satisfactory results. The only precaution to be taken in this respect is that nothing be done that will be harmful to any part of the respirator. The use of steam in disinfecting rubber masks is decidedly inadvisable. The "instructions for use" in or on the containers of approved respirators will suggest recommended cleaning and disinfecting procedures, and will also state specifically what should not be done.

Figure 1 by courtesy of the U. S. Bureau of Mines. Figures 2–5 by courtesy of the Bethlehem Steel Company.

For the price of a postage stamp . . . .

You can get the Free Bulletins & Catalogs

listed on page 69 of this issue

Wheeler Insulated Wire Co. In New Location

IT HAS been announced that The Wheeler Insulated Wire Company, Inc. expected to move from Bridgeport to Waterbury, Connecticut, on or about January 15, 1949. Wheeler had been located in Bridgeport since its founding in 1906. The company became a division of The Sperry Corporation in 1943.

The move involves transferring the manufacture of magnet wire, electrical coils, transformers and fluorescent ballasts to Waterbury where, for the past several months, Wheeler has been producing its complete line of sound-powered telephones and handsets. Wheeler will occupy a new, large factory and office building on East Aurora Street in Waterbury, a part of which was used by Vickers Inc., during World War II for the production of its line of hydraulic controls and equipment. Their new facilities will provide more adequate space to handle Wheeler's expansion in electronic and television fields.

Change in A.S.A. Safety Glass Standard

THE development of new types of heat absorbing safety glass for motor vehicles has brought about a change in the tests for safety glass approved by the American Standards Association. The new types of glass are used in vehicles that are air conditioned for service under high temperatures.

As originally approved, after a test had been made the glass had to transmit 70 percent of full radiance as defined in the standard. However, heat absorbing glass used in buses for operation across the desert and in very high temperature areas is manufactured to transmit less light than is the standard requirement for ordinary types of safety glass. As a result, the test requirements used for licensing automobiles and buses required a higher percentage of light transmittance after the test than was practical for the heat absorbent type of glass. The revised section of the code now recognizes this problem and provides a lower percentage of light transmission for safety glass used in the side and back windows of motor vehicles than had been required in the original tests. The revision has been issued as a separate one page document entitled American Standard Discoloration Test for Safety Glass.

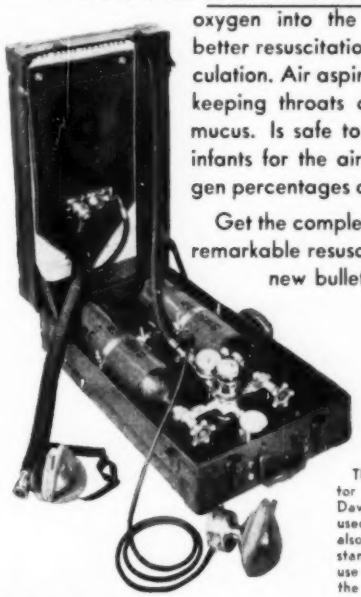
The American Standard Safety Code for Glazing Motor Vehicles Operating on Land Highways, Z26.1-1938, and the revision, American Standard Discoloration Test for Safety Glass, Z26.1a-1948, were prepared by a committee of 25 national organizations sponsored by the Association of Casualty and Surety Companies (Accident Prevention Department), and the National Bureau of Standards, under the procedure of the American Standards Association.

AUTOMATIC, SAFE RESUSCITATION EVEN IN ADVANCED ASPHYXIA

. . . where muscle tone and nervous reflexes have disappeared.

THE NEW DAVIS MIDGET RESUSCITATOR automatically and alternately introduces oxygen into the lungs —then draws it out as in normal breathing. Gets more oxygen into the blood stream for better resuscitation and increases circulation. Air aspirator is provided for keeping throats clear and clean of mucus. Is safe to use on adults and infants for the air pressure and oxygen percentages are controlled.

Get the complete details about this remarkable resuscitator. Send for our new bulletin.



The Davis Midget Resuscitator in combination with the Davis Inhalator with which it is used with great success. It can also be combined with any standard Davis Inhalator now in use or used independently of the inhalator.

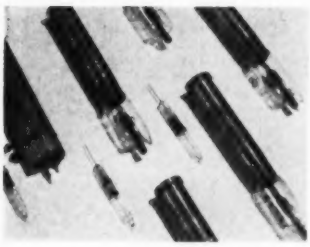
SAFETY DAVIS DIVISION

DAVIS EMERGENCY EQUIPMENT CO., INC.

64 Halleck Street, Newark 4, N. J.

I KNOW I'M SAFE...
with WOODEN SOLES!
Heat resistant wooden soles
Strong steel toe
FOR THE FACTORY...
No. 504-S
Wear a Reece "Strong Toe." Comfortable leather uppers. High, roomy steel toe protector, heat-resistant wooden sole. Have comfort-safe feet at work in oil refineries, foundries, steel mills, factories.
...FOR THE FOUNDRY
No. 380
The Reece "Hot Foot" sandals. Protect your feet in furnace and coke oven rooms. Straps on over your own shoes. Heat resistant wooden sole, strong galvanized iron counter, flexible hinge toe. Cannot slip.
BE SAFE THE REECE WAY... WITH A REECE "HOT FOOT" SANDAL!
There is no substitute for Reece Wooden soles
REECE WOODEN SOLE SHOE CO.
Dept. SE-2
Columbus, Nebraska

NEW TOOLS FOR A NEW ERA



Developments are under way for mass precision manufacture of components for Geiger counters.

AN AGE is known by its tools. On that basis the atomic age is here. The Geiger counter, heretofore a hand-made device put together by the physicist interested in studying cosmic radiation or searching for misplaced radium, is being readied for mass production. Developments are under way that will lead to economical precision manufacturing of tubes, instruments, and power supplies for Geiger counters by the tens of thousands, like components of radio receivers.

The growing availability of man-made isotopes has created a need for nuclear-radiation counters for medical research, for tracer studies, and for process control in industry. In university and atomic-energy research laboratories these counters will become as common as voltmeters. Should atomic energy be developed for industrial uses, radiation detection in many forms will be required for personnel protection.

A closer and grimmer need is that of the military forces as they take the possibility of atomic warfare into account. If this country should be attacked by any one of many conceivable weapons — atomic-energy bombs, radioactive dust, or an infiltration of radiation-poison packages—large quantities of detectors would be required throughout highly populated areas. It is a dour thought—but a radiation detector may be standard equipment for the civilian-defense crewman of the future.

One of the representative new types is a cylinder of chrome steel about an inch in diameter and six inches long, through which a heavy wire extends from a glass insulator at one end down the center of the tube to almost the far end. This wire is covered by a wafer of mica that must be only one half of one thousandth of an inch thick. One critical feature of the tube is the gas within it. A precisely controlled mixture of neon, argon, and an exact trace of chlorine, at something less than atmospheric pressure, has proved ideal. The chlorine, a chemically active gas and difficult to control, is essential. Its function is to hasten deionization after each "count" before another beta particle or gamma ray enters. The central wire is maintained positive while the metal cylinder is negative. A beta particle (electron) or gamma ray entering through the mica window ionizes some of the gas, causing a discharge between wire and wall. This discharge is registered as a click on an audible-type instrument or by a needle if visual indication is desired. The sensitivity of the tube and circuit is astonishing.

New Meters

Radiation detectors require new meters. One recently developed and now being manufactured has four scales of sensitivity, each with an appropriate color band, indicating intensities of radiation as to safe, mild, or hazardous. The emphasis has been to provide meters with adequate sensitivity and maximum reliability, sturdiness, and compactness. Fortunately one of the basic instrument mechanisms developed to meet the severe requirements of World War II could be adapted. The development was thus to adopt this mechanism in a complete instrument to fit in with the many other components, and at

K-LENS-M *Lens Cleaner*
and Dispenser Cabinets
HELP YOUR SAFETY PROGRAM

Workers don't complain about poor vision with safety goggles when they can use K-Lens-M Lens Cleaner. Amazing solution easily removes oil and smudges *without leaving hazy rainbow* effect.
Convenient to use. Workers turn to nearby K-Lens-M Dispenser Cabinets . . . press spray pump thru which jets K-Lens-M Lens Cleaner . . . draw a lint-free K-Lens-M tissue from bottom of cabinet—and wipe their goggles CLEAN! Used tissue is dropped into cabinet waste tissue space. Complete unit only $12.50.
MAIL YOUR TRIAL ORDER TODAY.

The WILKINS Co. **CORTLAND 2, NEW YORK**

Handsome all-metal cabinet. Easy to install, operate and service. Baked enamel finish in white or safety green. More details upon request.

the same time provide the means for operation and use of the overall detecting device. Radiac instruments (as radiation detection equipment is now called) will appear in various forms, from large units, for bringing indications from remote places to a central point, to outfits that a man can carry with ease. Use of the tiny high-voltage batteries, tubes, and other components as developed for hearing aids and similar sets requiring the utmost in small size will help hold the total weight of the portable unit to not over ten pounds.

Picture by courtesy of Westinghouse Electric Corp.

One of the New Products may save a life—
Even Your Life!
See pages 70–71 for New Products in the Safety Field

Safety on the Santa Fe

(From page 28)

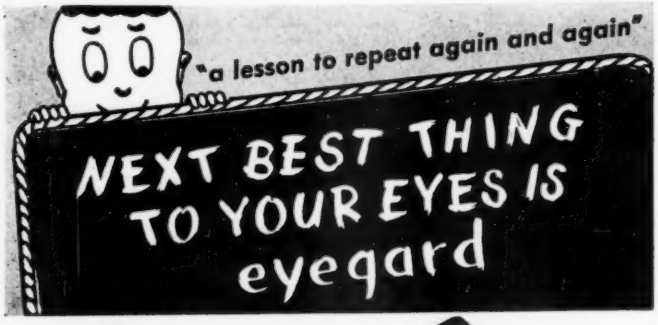
than mentioned above. However, I am sure that all will understand from what has been said of the Safety Department that "SAFETY is more than a tradition with the Santa Fe . . . , it is a sacred obligation."

"Chris" and His Six Thousand Horses

The trip I made in the cab between Chicago and Kansas City will be long remembered. Safety Superintendent Duggan and I met the "Chief's" giant diesel as it came in from the yards and coupled on to the long string of cars in the station. At once, a coupler test was made. On board were Road Foreman Hoster, an experienced veteran and "tops" in his profession, Engineer "Chris" Norby, and Fireman Sloan. Chris seemed pleased to have company on his fast run between Chicago and Ft. Madison a distance of 233 miles which would take 245 minutes.

All watches were compared—engineer's, conductor's, firemen's, and brakeman's. The "Chief" was cleared by the dispatcher, and Conductor Donath gave the train orders to Chris, who read them over and checked with Fireman Sloan. Minutes later, Conductor Donath gave the signal. Across the cab came the voices of engineer and fireman, "Clear board!"—and the motors began to hum. Five hundred feet out of the station the "five hundred foot air test" was made. All was well and we were off—the long train glided out of the yards. The first part of the trip was made under automatic block signals with the engineer and fireman calling the blocks to each other. Speed boards along the right-of-way were also acknowledged and speed restrictions checked. After we had passed Joliet, Illinois, the "Chief" started rolling—sixty—seventy—eighty—ninety.

Before many minutes, we were in the "Train Control" division—as fine a safety measure as was



In counterpart or regular models. For chippers and grinders as well as welders.

Eyegard "Champions" have 10-way ventilation!

Eyegard "Champions" are easier on the eyes . . . help your men to work steadier with less "time out." There's extra comfort in them because the superlight plastic is molded to form-fit the face . . . extra protection because the goggles are impact-resisting . . . extra ventilation through three large vents at side of cup and seven additional vents around the lenses. Cool and fog-free. With all these superior features, they cost you no more than ordinary goggles. Next time you order—get Eyegard "Champions"!

Write for free catalog of Eyegard Equipment . . . it will save you money.

AMERICAN INDUSTRIAL SAFETY EQUIPMENT COMPANY
391 BRIDGE STREET BROOKLYN, NEW YORK
DIVISION OF THE BURDETT OXYGEN COMPANY • CLEVELAND, OHIO

ever developed by man. The Automatic Block System was left behind and from now until we reached Ft. Madison, Chris and his fireman would watch the control board in the cab,—green for high, yellow for medium, and red for low. "Train Control" means exactly what it says. The engineer must at all times abide by the cab's signal system—reduce speeds accordingly —*or the train will automatically come to a complete stop.* As the signals change from high to medium to low, a humming noise warns the engineer he must start reducing power and apply air. As we speeded around the banked turns, Chris would look back on the right curves to see if his train was in good order and Fireman Sloan would do the same on the left curves—another safety precaution.

The Ft. Madison station appeared all too quickly and we stopped for a few minutes. The train then moved slowly westward for a mile to Shopton, which is the first point on the trip from Chicago to Los Angeles where the "Chief" receives a thorough inspection by other members of a well-trained team of specialists.

Our dinner back in the diner was of excellent food inspected for purity and quality. The Fred Harvey service is unbeatable—another sample of a team of specialists looking after the safety and welfare of the traveling public.

Night was now upon us, and again we were back in the cab watching the signals and hearing the engineer and fireman check the warnings. Then, far ahead, the lights of Kansas City were reflected in the sky . . . and soon we were safely in the station. Another inspection crew swarmed over the train, for, Kansas City is the second point on the run where the train is thoroughly gone over.

My journey had ended . . . but the "Chief" went ever westward. As the red warning lights disappeared into the night, I felt a little sadness for I had made a real friend of the "Chief." But as I turned away, I had a great sense of security for the many passengers, government officials, businessmen, movie celebrities, and others who were sleeping so peacefully: they would reach their destination on time and safely.

And all the time the engineer will have his left foot on the safety pedal—for, if he ever takes it off—at any time—the train will come to a complete stop.

Pictures by courtesy of the Atchison, Topeka & Santa Fe Railway.

How Much Does

(From page 11)

pave the way to smooth production. On the other hand, the regularity with which they occur determines to an appreciable degree the efficiency of operation—and the cost of production. The word "cost" here has a very definite meaning. It means the cost of Workmen's Compensation Insurance, plus the incidental cost attendant to every injury, plus the cost of many accidents when no injury occurs whatsoever.

Many years ago, before Workmen's Compensation Insurance laws were enacted, employers did not think so much of accidents in terms of "interferences to production," or in connection with the "efficiency of production" or, for that matter, with the cost of production or cost of insurance.

That one may better understand how this thinking has developed, go back about forty years before Workmen's Compensation became law. At that time when a man took a job he assumed the risks that went with the job. If he sustained an injury while at work, he could not collect moneys from the employer unless he proved that his employer was negligent. He had to prove this in a court of law. It was also accepted that if a fellow worker's negligence caused the injury, that injury was not the responsibility of the employer.

When the philosophy was adopted that such disablement is part of the cost of production and should be incorporated in the price of the product, Workman's Com-

An Accident Cost?

pensation Laws were passed. Industry became legally liable for the injuries to its workers, became obligated to provide benefits during the time lost from work, for medical and surgical care that injuries required, and for death benefits to dependents if the injuries were fatal.

It became evident that if industry were to pay such costs it should have control over those costs. This brought about the development of three specialized skills: safety engineering and industrial hygiene to reduce the number of work injuries and occupational disease disabilities by removing their causes, and industrial medicine to minimize the consequences of injury and disease and to restore the disabled to useful employment.

Even though some groups frown at the mention of profits, it is certainly true that the profit motive underlies our American way of life. Needless to say, survival in a free competitive system requires industry to control its production costs. Only in that way can it stay in business. Workmen's Compensation is a part of production cost. The experience of the individual plant largely determines the cost the plant pays for its insurance. Two plants making the same product and of the same size may pay entirely different costs for compensation insurance. When a plant's compensation losses are low, the insurance costs are low and that part of their production cost is low. When compensation losses are high, the reverse is true.

As an example of the variation in cost of insurance and the savings that are truly direct savings in production cost, compare the insurance rates of two identical companies of the same size and in competition with each other. Both develop an annual payroll of $500,000. Each company has been in business for several years and has developed an insurance rate which reflects its own past experience. This rate is a modification either above (a charge) or below (a credit) the established rate for their industry. One of these establishments (Plant "A" in the accompanying graph) recognized long ago that accidents could be controlled. The other (Plant "B"), either through complacency or indifference of management, has not recognized the accident problem. The result: the first company enjoys a Workmen's Compensation Insurance rate of $1.35 per $100 of payroll, while the other must pay $3.79 for exactly the same insurance coverage. This difference of $2.44 per $100 of payroll, computed on a $500,000 payroll amounts to $12,200 annually.

This example of insurance savings due to good accident control is given to controvert the hard boiled belief of many who are in a position to control such costs that industry pays a fixed insurance premium regardless of experience. Don't be misled. There are many firms which save annually several times the amount indicated in the case I cited above.

Now, some believe lukewarmly in insurance savings through con-

Only in Safe-Hi LADDER SHOES

DO YOU GET THESE EXCLUSIVE FEATURES BECAUSE...

SAFE-HI has straight ridges of mixed cord and rubber in the Tread.

For smooth, dry surfaces, you must have rubber . . because rubber holds firmly on DRY surfaces, but would slip on wet surfaces.

For wet, slippery surfaces, you must have cord . . because cord holds securely on wet surfaces.

For greasy, soapy surfaces, you must have straight ridges . . because ridges cut thru and scrape off foreign matter and grip the surface itself.

For snowy, icy surfaces, you must have a spike—and a sharp one . . because dull spikes are a hazard. The SAFE-HI spike is self-sharpening . . always sharp.

Safe-Hi PRODUCTS

Ask your safety dealer or write us

ROSE MANUFACTURING CO.
1731 Arapahoe St.,
Denver 2, Colo.

- TV & FM INSTALLERS
- TELEPHONE,
- TELEGRAPH and
- POWER LINEMEN

and wherever
EMERGENCY SERVICE
is required

The Wheeler Sound-Powered handset — complete within the single instrument — is a new development of an old principle. It's a step and time saver on any job where temporary, convenient and inexpensive telephone service is needed. No power source, no batteries to bother with. Operates over two conductor full metallic or single wire, ground return circuit. Safe, tough, quick, dependable. Efficient talking up to 25 miles. See your local jobber or write, wire or phone Waterbury for complete details.

MAGNET WIRE • COILS • BALLASTS

THE
WHEELER
INSULATED WIRE CO., INC.
2302 EAST AURORA STREET
WATERBURY 91, CONNECTICUT

trol of accidents, but do not realize that there are many other costs that are just as important, if not more so, than the dollar cost of insurance. These other costs are uninsurable but they must be figured into your production expense. They have been called by many different names — "hidden," "incidental," or "indirect" costs because they are not so easily determined in dollars and cents—but they are nevertheless real and may run as much as 2, 4 or even 6 times as much as the insurance bill.

Some of these losses are: production time lost by supervisors and other workers when an accident occurs; time taken for first aid; skilled services of the injured employee while he is out; breaking in his replacement; the possible inefficiency of the replacement since he may not be as good a worker; the injured employee may not be able to work as well for some time when he returns because he is handicapped in some manner.

Then there are losses due to material and equipment damage, and idle machines. In some extreme cases these losses may be so serious that they affect the good will of a company and actually lose business income.

The economic aspects of industrial accidents are far reaching when you consider who pays for these costs. First, the injured man pays because when he is laid up in a hospital, at home, recovering from his injury, the workmen's compensation law provides benefits of a *percentage* of his average weekly wage. The difference between an amount represented by the percentage stated in the law, and his full wages is lost by the disabled employee. In addition he pays through physical suffering.

Second, the department head pays because the quality of the work of his department may be affected. The quantity of his work may be reduced. His work may be delayed and his production schedule slowed up.

Third, the company pays because each accident tends to increase the direct cost of workmen's compensation insurance, and because the injury, damage and the interruption caused by accidents directly interfere with the operating effectiveness of the company as a whole. Accidents, indeed, are an important source of unnecessary non-productive operating costs.

What Can Be Done to Control Accidents and These Costs?

Insurable hazards are ordinarily very complex, and those covered by workmen's compensation are some of the most complex, if not the most complex known to insurance. The occurrence of accidents to employees is affected by their degree of experience and training, their age, their physical and psychological condition. It is affected by the nature of their employment; by the location and condition of buildings and equipment in which or with

Fire Equipment Body Appoints H. E. Hilton

APPOINTMENT of H. E. Hilton as Executive Director and Counsel of the National Automatic Sprinkler and Fire Control Association, with headquarters at 205 East 42nd Street, is announced by William J. Carroll, President of the Association. In his new position, Mr. Hilton will serve his association at both national and local levels and will assist in the association's Washington activities.

For the last six years Mr. Hilton has been Assistant Manager of the Insurance Department of the Chamber of Commerce of the United States in Washington. In that position he has served as Secretary of the National Fire Waste Council which conducts among several hundred local chambers of commerce an annual fire prevention contest.

Mr. Hilton brings to the association many years of organization and promotional experience in the field of insurance, and is the author of a number of brochures dealing with insurance subjects.

which the employment is carried on; by the managerial ability of the employer and his attitude toward accident prevention. It is affected by temperature, weather and climatic conditions. The cost of accidents is dependent upon their severity; upon the wage scale; upon the actions of the legislature and the policy of officials administering the compensation act. Many of these conditions are not constant, but in a condition of perennial flux.

To successfully combat these factors working against profitable production requires study, planning, action and follow-up. Accidents are caused. Don't forget that. The work in your establishment will be interrupted by accidents unless you have searched for and corrected unsafe physical conditions, and unless all workers are carefully and thoroughly instructed, trained and supervised regarding the exact methods they are to use in doing the work assigned to them.

All accidents regardless of the resultant injury, damage, or loss, have basic or fundamental causes. An accident can occur only when caused by an unsafe act of a person (a wrong method), or due to the existence of a mechanical or physical hazard, or a combination of both.

What Can Management Do?

When you allow a man to continue to do a thing the wrong way, which is usually the unsafe way, you are gambling that he won't get hurt. You are also allowing him to gamble. When you allow a hazardous condition to exist you are gambling, and sometimes the stakes are high.

There is a right and a wrong method of doing every job in your establishment. You should not guess that your people understand and will use safe methods. Make sure that each worker 1. has been told what his job is and why it is important; 2. has been shown how his job is to be done by the right method; 3. has actually done the job under a supervisor's observation showing that he understands what he has been told; 4. is thereafter regularly supervised to make sure that he is continuing to do his work as he was instructed.

The deparmtent head or supervisor is the man who controls methods. The continuous search for best working methods is one of the most important things he can do to control loss resulting from accidents. Don't overlook the fact that best methods are usually safe methods.

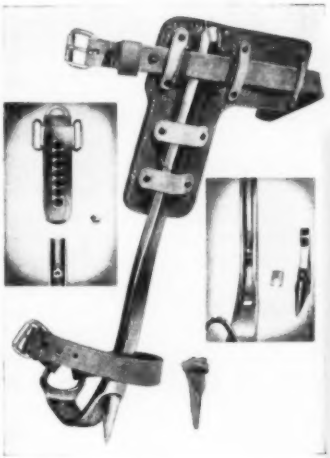
Methods rather than physical conditions have been stressed first because, when the right method is used, many physical hazards may be temporarily surmounted. This statement however is not an endorsement of a policy that consistently ignores hazardous mechanical or physical conditions.

No accident prevention program will be complete and satisfactory unless mechanical and physical hazards are recognized and corrected. Furthermore, if the cooperation of employees with a safety program is to be obtained, management must first provide a safe place to work.

To illustrate the basic causes of accidents, here is an actual incident which occurred in a candy plant. A four-wheel hand truck loaded with candy was being pushed onto an elevator at the second floor level. As the truck was half on the elevator another employee, on the upper floor started the elevator by means of a pull rope control. Fortunately, the man pushing the truck had time to jump back out of the way. As the elevator ascended, the truck wedged at the second floor ceiling.

No person was injured in this accident. That was a matter of luck. The loss, amounting to hundreds of dollars, consisted of 1. cost to repair the elevator which was damaged considerably, 2. cost to replace the truck, 3. cost of ruined candy, 4. cost of cleaning up, 5. cost of extra labor for handling materials while elevator was out of service. These were not insured losses. The additional insurance cost was avoided only by a matter of a split second, as the employee

Accentuate
THE
POSITIVE
WITH
Miller



The Miller adjustable climber is equipped with exclusive bolt fastened adjustable shank, permitting easy adjustment from 14" to 17½". High carbon steel, removable gaff locks in place with special key device. Be positive - - get the best - - get Miller adjustable climbers.

FREE

Attach coupon to your letterhead and get Mike, Miller's trademark reproduced in colorful plastic. Mike watches quality, service, and price — make him your safety club representative.

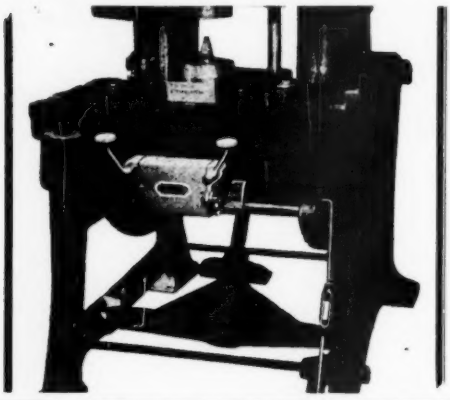
Miller Equipment Co., Inc. Dept. A- 2
Franklin, Pa., U. S. A.

I am interested in the above equipment. Please send additional information and Mike, too.

Name_____
Position_____
Company_____
Address_____
City_____ State_____

For SAFETY *see Miller* FIRST

Miller
EQUIPMENT CO., INC.
FRANKLIN, PENNA.



A Practical Safeguard For Your Punch Presses

THE SIMPLEX SAFETY LOCK

Users are highly pleased with its performance, as attested by unsolicited letters and by the many repeat orders.

The Simplex Safety Lock permits the operator to work at high speed with complete freedom and minimum fatigue. Safety is assured and production actually goes UP on fast presses.

Finger Touch Unlocks Treadle. No Lost Motion—Higher Production —With Safety.

Shipped immediately on 30 days' trial. Must sell strictly on its own merit. One size fits any common foot trip press.

See your distributor or order direct. $25.50 F.O.B.

PHOENIX MANUFACTURING CO.
ALBERTVILLE, ALA.

might have been precipitated down the elevator shaft or wedged between the floor of car and ceiling with the truck.

The fundamental cause of this accident was primarily due to the existence of an unsafe physical condition. The elevator control mechanism should have been of the kind to prevent the car from being moved until all shaftway gates or doors are closed. The unsafe condition, coupled with the unsafe act of the upper-floor employee who started the elevator without first making sure it was safe to do so, made this accident possible. The fact that management had unsafe equipment of this character placed a greater responsibility on them to establish a best method of performing this simple task. The cost of this accident amounted to many times the cost of installing safe controls.

YOU'RE SAFER When You Can SEE MORE

That's Why Safety Engineers Prefer ACME Full-Vision Gas Masks

No other gas mask gives you the unobstructed, full vision of the Acme Gas Mask. You can see as well as without a mask—up, down and to either side. There are no unseen hazards to worry about. This means freedom of action and greater protection to wearer. That's why it will pay you to specify Acme. Seeing is believing. Write for bulletin.

ACME
PROTECTION EQUIPMENT CO.
3037 West Lake Street, Chicago 12, Ill.

Explosion Hazards in Candy Plants

Not long ago, a mid-west candy plant had a fire and explosion which took the lives of many persons. The candy business is not primarily thought of as an extra-hazardous business like explosives manufacturing, but fundamentally it has all the makings of a catastrophe in some of the operations, if something goes wrong. For example, it uses pressure vessels. Pressure vessels have been operated for many years without giving trouble and yet it is possible, through a mistake in an operation, lack of intelligence on the part of some person or, in other words, a personal failure, to cause an explosion.

In most candy plants there is starch, sugar, cocoa and other things which, under the right conditions, are extremely explosive. Plant after plant has handled starch in the mogul rooms for many years without causing an explosion; but if a combination of wrong circumstances are allowed to be brought about, an explosion can and will occur.

There isn't any doubt that on pressure vessels, for example, safety valves properly maintained, proper piping, proper interlocking will very materially reduce the possibility of explosion. There isn't any doubt that keeping the amount of dust in material such as starch to a minimum, keeping the accumulations on ledges, beams and air ducts to a minimum, will reduce the possibility. Nevertheless, fundamentally, there is the possibility of large quantities of starch being brought into suspension into the air. With the right amount of air and with a spark, an explosive mixture develops that will, by a series of explosions, cause serious damage and a great loss of life.

Frankly, safety engineers don't know how to keep starch from exploding under the exact, right conditions. Since it must be used, the only thing to do is treat it with respect.

Smoking or fire, bad wiring, sparks in the ducts, overheating and many other things can bring about an explosion. Poorly trained people, careless, low-grade help can bring it about.

What management has to do is to find ways and means so that the unfortunate combination of circumstances cannot develop.

From an address presented before the 1948 meeting of the Candy Executives and Associated Industries Club.

Don't Drown Your Feet

(From page 13) the skirt is turned down it does not drag or cause the fireman to trip. A special collar reinforcement extends around the top of the leg to keep it open so that the fireman can quickly get into his boots.

Another special boot is designed for industrial use where oil is encountered; for example, in refineries, auto laundries, packing houses, etc. This boot has a synthetic rubber sole and heel which has excellent resistance to fats and oils, and the entire boot, upper and bottom, is dipped in a special chemical solution which provides a high degree of resistance to oils and fats.

There are also white boots for use in dairies and boots specially made for women. Among all these types of boots there are various sole designs. Some styles have heavy knurling for sure grip, some have light knurling. All have many features that will give the worker in each industry the desired fit, comfort and wear as well as complete waterproof protection.

2. Pacs. These are worn mostly by miners, but are also used for other industrial purposes where snug fit around the leg and ankle is desired. They are worn over the socks. One type, 15 inches high, is made with either plain toe or safety toe. Another type, favored by woodsmen, is made with a leather top. Some have full cleated soles and heels.

3. Bootees and Work Shoes. Bootees are worn mostly by miners—coal, lead, silver, gold and ore miners. They are worn over the socks and have a cushioned insole for comfort and a fully-cleated heel. Market for the work shoe is found among miners, farmers and many workers in industrial plants who operate on wet floors. This shoe is made with either plain toe or safety toe. It is used in mining as well as in industrial plants and dairies.

4. Buckle Overshoes. These are all worn over shoes. They are of two types, fabric or all-rubber. All-rubber are in two heights with either a four or five-buckle closing. They find a wide market among farmers, railroad men, truck drivers, delivery men, postmen, and other groups whose work takes them out in bad weather.

5. Work Rubbers. These are worn over shoes and come in a variety of types. They find a wide market among farmers and railroad men, construction workers, delivery men, truck drivers, postmen, policemen and workers in industrial plants.

6. Rubbers. Rubbers that are lighter in weight and are used where severe use does not require the heavy-type work rubber.

7. Canvas Rubber-Soled Footwear. In canvas rubber-soled footwear there is a popular general purpose work shoe designed for carpenters, warehouse workmen and roofers, where a rubber sole is desirable and where a cool, full-breathing top is an added comfort. This shoe has a cushioned insole for comfort, a high workshoe heel which eliminates strain in changing from conventional shoes. It is cool because of the breathable fabric upper and is completely washable.

Hints on Caring for Waterproof Footwear

1. When not in use, boots should be kept in a cool, preferably a dark place, away from sun and extreme heat because these are enemies of rubber.

2. Boots should be hung upside down on rack to dry out thoroughly. They should not be stored with top or skirt folded tightly down. Proper storage avoids static cracking

3. All rubber footwear that has been used around fats, greases, oils and acids should be washed before it is stored away.

Sterilization of Waterproof Footwear

Since all workers do not have the same foot size, the same foot shape or the same manner of walking, rubber footwear will not give its best results if worn by more than one person. However, because of labor turnover, or for other reasons, employers frequently issue to their

PUT MAGNETISM INTO YOUR SAFETY PROGRAM

Just "set" this practical handy guard, (called Dilley Magnetic Grip Shields type B) on your lathes, shapers, millers, grinders, other machinery; then "lift it", (if you can).

You'll instantly feel the "packaged energy" in the powerful "ALNICO" magnetic base, instantly affording attachment to any machine at any angle you wish.

Tru-vision plastic shield, bolted to double non-ferrous arms; arms secured with hinged-action to our assembly type ALNICO magnet.

Popular engineered sizes.

Thickness shield.	Dimensions of shield width x height inches
⅛"	8 x 10 — $ 8.40 ea.
⅛"	10 x 12 — $ 9.20 ea.
⅛"	12 x 16 — $11.00 ea.

Other thicknesses and sizes available.
Order direct today or send for literature.

ALBERT W. PENDERGAST, 1118 W. Erie Ave., Phila., 40, Pa.
Manufacturer and Distributor of Industrial Safety Equipment.

Safety Engineer Available

QUALIFIED safety engineer with fifteen years' insurance experience in workmen's compensation — industrial hygiene — general liability and truck fleet accounts. Good technical education —Excellent references. No territorial preferences.

Write Box 90, % SAFETY ENGINEERING, 75 Fulton Street, New York 7, New York.

Pay Inserts Make Safety's Point

These dollars won't help you if you're caught in a coupling—
dont get caught!
it takes good eyes to count this money—
wear the goggles that protect your sight—
Are you going to be on the payroll next week?
there's only one right way to do work safe

CONVINCED that every miner's take-home dollars exert an influence matched by no other appeal, National Coal Association, Washington, D. C., has gone right to his pay envelope with their safety program.

Mine management, active in carrying NCA's safety program into the mines, has heartily accepted this new direction, and more and more miners are being impressed with the realization that safety is a *personal* project. At least a hundred thousand miners are reached regularly.

Attached to the very dollars that miners earn are inserts that point up specific dangers—and every insert bears the poignant question, "Are you going to be on the payroll next week?"

This is in fact the application of powerful "point-of-sale" persuasion, and, like its counterpart in merchandising, can prove to be that factor that effects the greatest impulse action.

"Point-of-sale" appeal has, in the idiom of merchandising, achieved the all important "I'll buy that"—and, in the opinion of National Coal Association, a strong safety appeal at the "point-of-pay" will get the same reaction.

LEFT—

At top are two typical safety inserts which are attached to miners' pay envelopes. The back of every insert carries the message shown at bottom.

workers boots or other types of rubber footwear which have previously been worn by others.

In these cases it is expedient to sterilize such footwear to prevent the possibility of infection from organisms left by the previous wearer.

To this end the following methods of sterilization are recommended:

Thoroughly wash all inside parts with soap and warm water. Rinse with clear water and dry. This will remove to a large extent the dirt, fatty acids, and other foreign matter and will partially sterilize.

STERILIZATION:

A. Preferred Method—Live steam fifteen minutes.

1. Run live steam at two to three pounds line pressure into footwear, closing top opening to retard exit of steam and maintain uniform temperature and pressure throughout entire inside surface.

2. Alternative Method — Place footwear in a tight chamber and subject to live steam at two to three pounds pressure for fifteen minutes.

When, because of equipment limitations, steam treatment for complete sterilization is not feasible, the following is suggested to rid footwear of parasites which cause athletes' foot, the most probable source of dangerous contamination:

B. After washing and drying as described above, dust thoroughly the inside of the footwear with a proven disinfectant powder, being sure the lining is completely covered. Ultraviolet germicidal lamps are also available for sterilizing footwear.

It should be evident from the brief descriptions given here that rubber footwear has been devised in a wide variety of specialized forms. It is no longer necessary to make just a few types do for all kinds of work. One can now select rubber footwear which is suitable for each type of dampness hazard and for each individual's personal preferences.

Neither employers nor employees need get cold feet over water and oil hazards. There is a boot for every need—rubber footwear for every need.

Photographs by courtesy of the United States Rubber Company.

PAINTED LIGHT

(From page 15) general, a pigment with a long afterglow requires longer exposure to the activating light than one with a shorter afterglow. It should not be assumed, however, that this question of exposure-time offers any serious difficulties. Even the long-afterglow pigments, for example, do not require more than two minutes' exposure to sunlight to reach full excitation.

The sun, as the source of energy for our planet, offers the most intense and most efficient light for activating these phosphorescent pigments. Ordinary incandescent

G-S EYE SWEEP
Double Purpose MAGNET AND LOOP

AN INDISPENSABLE FIRST-AID INSTRUMENT

for removing metallic particles, dirt, chips, any foreign matter from the eye. **$2.50**

Magnetic tip easily picks up the smallest piece of iron or steel. Flexible loop is very convenient for removing cinders, dirt and non-magnetic particles.

Sterilization will not affect magnetic properties or loop. A hard rubber carrying case is provided with each G-S Eye Sweep.

ORDER DIRECT TODAY OR SEND FOR LITERATURE

A DEPENDABLE GUIDE TO SAFETY
GENERAL SCIENTIFIC EQUIPMENT COMPANY
TESTED INDUSTRIAL SAFETY PRODUCTS

2706 W. Huntington St., Philadelphia 32, Pa.

RESPIRATORS • PUMPS • GOGGLES • SHIELDS • GLOVES • APRONS • HELMETS

and fluorescent lamps or "black" light are also completely satisfactory. One can even use a flashlight if no other light source is available.

Are They Safe?

While most people will agree that it's a good idea to have safety signs that will glow in the dark, most people will want to know if these pigments really are practical and safe. Typical reactions to the idea of luminescent paints might be as follows:

". . . sounds to me like the stuff has radium in it. I don't want any of that around my plant! I'm keeping strictly away from these radiations, and . . . and atoms, and . . . things."

"Well, the idea is all right, I guess. But is it practical? Does it work? If I'm going to have these signs looking like a bunch of fireflies holding a clambake, I don't want to have to be sending someone around with a paint pot every other night to keep the fireflies glowing!"

"Friend of mine tried some of that luminous paint before the war. Didn't brush on worth a damn—kept caking out in the can. No, I'm not interested. It's just too much work."

These would be reasonable objections if they were based on fact. They are, however, based on ignorance. The pigments do not contain radium or any other radioactive substance. Paint manufacturers classify them as non-toxic. Only the cadmium sulfide can be considered as hazardous, but such small quantities of it are used in making luminescent paints that even the paints with cadmium sulfide are no more dangerous than ordinary paints with lead pigments.

Are They Practical?

Doubts concerning the lasting qualities and maintenance of phosphorescent paints can also be dismissed. While no definite assurance of service life can be given, some pigments have proved to be serviceable for two and three years. This is particularly true of the zinc and cadmium pigments used both indoors and out. The calcium and strontium pigments are affected by water and acids; but when protected by a coat of pale, water-resistant varnish, the paint should last at least six months, even under severe outdoor exposure.

Are They Difficult to Handle?

It must be admitted that the settling of phosphorescent pigment in the paint was a serious problem before and during the war. Today, however, manufacturers have improved the paint so that it is now more workable: they sometimes package the pigment and vehicle separately; they use composite vehicles; and they also have improved the suspension by using thickening agents such as zinc palmitate and aluminum stearate. Painters will no longer find these paints difficult to handle, and further improvements in brushability may be expected. Although

DON'T THROW THEM AWAY
BEFORE
AFTER
GLOVES COST YOU MONEY
WE CLEAN, STERILIZE, RE-SHAPE, SORT, PAIR AND PACK IN BUNDLES OF 10 PAIRS. WE FURNISH LOCK-TOP, STEEL CONTAINERS FOR COLLECTION AND SHIPPING
FREIGHT PAID WITHIN 300 MI.
USE THEM OVER AND OVER AGAIN
We are saving thousands and thousands of dollars a year for nationally known companies by reclaiming work gloves of all types; leather, cotton, asbestos, etc. IT COSTS NOTHING TO FIND OUT. TRIAL ORDER FREE!
CLEANERS AND PROCESSORS OF LEATHER, COTTON AND RUBBER GOODS
Wash-Rite Company
1412-26 CORNELL AVENUE · INDIANAPOLIS 2, INDIANA

WHAT ARE YOU DOING TO HELP YOUR ASSURED
Reduce Accidents and Injuries?

JB47 Series

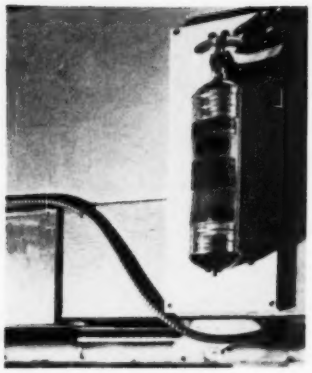
JB48 Series

STOCK EMBLEMS—Heavily gold plated, appropriately enameled. Pin and safety lock catch, any number years—75¢ ea. plus tax.

Special designs to order!

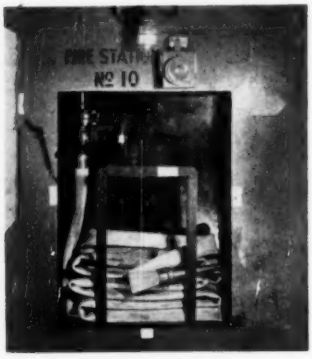
Write for free Safety Circular NOW!

CLARENCE WILLIAMS
WILLIAMS JEWELRY & MFG. CO.
Silversmiths Bldg. 10 S. Wabash Ave.
Phone CEntral 6-5018 Chicago 3, Ill.

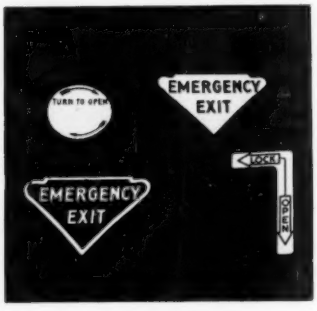


Panel for hand fire extinguisher is luminescent.

Panel glows in the dark, indicates fire equipment.



Patches of luminescent paint around fire hose cabinet designate the important elements of equipment and show location of emergency light above.



Various types of phosphorescent safety signs to give directions for leaving premises and for controlling switches and valves in emergencies.

luminescent paints do not lend themselves to the very finest type of brushing finish, application by either spray gun or brush is now easy and satisfactory.

Applications

The use of phosphorescent pigments is by no means limited to its application as a paint. Also available commercially are luminescent papers incorporating these pigments or coated with them; luminescent plastics either impregnated, coated or printed; luminescent printing inks; luminescent textiles, coated or printed; and luminescent porcelain enamels using the zinc and cadmium sulfides. The diversity of these products can be translated into an equally wide range of practical applications.

The luminescent pigments are really war-babies, for although they had already reached the stage of commercial development before the opening of hostilities, it was in the stress of war that their usefulness was shown and improvements made. This specialized lighting allowed our soldiers, sailors and airmen to go about their grim business safely and efficiently at night. Luminescent instruments and dials, instruction plates, and navigational maps made it possible for planes, ships and field equipment to operate under blackout conditions, and at the same time, eyes were maintained at the highest level of dark-adaptation. Luminescent materials were used for all types of equipment and troop-identification. Merchant ships of 3,000 tons and over had phosphorescent tapes and signs to indicate hazards or danger spots, and to aid the movement of personnel around the ship during emergencies. These pigments proved their usefulness in war and saved lives. They are capable of serving industry and the community just as worthily in time of peace.

Probably the most obvious application is for luminous directional and exit signs or arrows. In industrial plants, in commercial and public buildings, and in institutions, such signs would guide people quickly and safely to the outside. They would help prevent panics. They would always be visible.

Equally important in an emergency would be luminescent signs, panels, or symbols to designate the exact location of fire fighting equipment. The answer to our mounting fire losses, aside from the obvious one of preventing fires from starting in the first place, is to attack them while they are still small. The first few seconds or minutes are crucial. It is then, when one fire extinguisher could put out the blaze, that the seriousness of the fire is often determined: will the final result be a scorched corner and smoke-filled room, or will it be a blazing inferno and a blackened structural corpse? Extinguishers which can't be found at once, which are fumbled for in the dark, are extinguishers too late. With fire fighting equipment clearly indicated by luminous signs, these few vital moments can be put to good use. It's unfortunate but true that many simple fires become disasters merely because the extinguishing equipment never had a chance.

Safety engineers should also take a good look at what luminous pigments can do to highlight other industrial hazards. These dangers may range from the general ones found in all industries, such as falling and stumbling hazards on stairs, to the individual mechanical, electrical, or chemical hazards peculiar to each factory, plant, or railroad yard. Here again, luminescent paints, tapes, and plastic or enamel strips can be used to outline stair treads and corridors, to designate dangerous areas, to indicate the exact position of switches, valves, flashlights, telephones and

other emergency equipment.

Man was made for light, not for darkness. He has made his nights bright, his cities aglow with incandescence. But his machines are not infallible: when this man-made sunlight does fail, man is reduced to the status of his ancestors living in caves. This situation, however, need not continue. He can have light at any time—at all times—maybe not enough to see very much, but enough to know where he is and to be able to go where he wants to go in total darkness. Safety facilities don't have to stay in the dark, because you can see with painted light.

Photographs by courtesy of the New Jersey Zinc Company.

Safe Disposal of Fluorescent Tubes Wins $250

AS DESCRIBED by the Chicago Tribune Press Service, Felix L. Hartman got tired of hurling burned out fluorescent tubes into a barrel and running like mad to escape flying glass and released gases, so now he's $250 richer.

Hartman, federal works agency electrician, was awarded the $250 by FWA Administrator Philip D. Fleming for devising a "tube crusher" which safely draws the gases out of the tubes and eliminates flying glass.

Safety engineers have been increasingly concerned in recent months with the safe disposal of these tubes. Hartman is to be congratulated for coming up with a worthy idea and one which paid off as well.

New President for Asbestos Textile Inst.

THE Asbestos Textile Institute recently held its annual meeting at New Brunswick, New Jersey, and at that time elected Mr. George S. Fabel to serve as President for the ensuing year, succeeding Mr. George W. Marshall, Jr. who has served in this capacity for the past two years. Mr. Fabel is President of the Southern Asbestos Co., of Charlotte, N. C., and has been active in promoting the affairs of the Institute since its founding in 1944. Other Institute Officers elected to serve during 1949 were: Vice President—Mr. A. R. Byrnes, Union Asbestos & Rubber Co., Treasurer—Mr. William C. Scott, Keasbey & Mattison Co., and Secretary—Myril C. Shaw, Rutgers University.

The Asbestos Textile Institute is a non-profit organization, founded in 1944 to render research, technical and sales promotional services to the asbestos textile manufacturing industry. The General Office of the Asbestos Textile Institute is located at the School of Ceramics, Rutgers University, New Brunswick, New Jersey.

Change of Name

A CHANGE in name to Factory Mutual Engineering Division is announced by the Inspection Department of the Associated Factory Mutual Fire Insurance Companies. There is no change in organization or methods.

The Division provides a wide range of engineering services related to industrial fire protection. Field engineers inspect insured plants periodically and act as advisors to management. Departments are organized for development of standards, adjustment of losses, valuations of manufacturing properties, and the preparation of insurance plans. Research and testing are carried on by the Factory Mutual Laboratories, which operate as part of the Engineering Division.

Headquarters are in Boston, and ten district offices are strategically located in industrial areas throughout the United States and Canada. Recent rapid growth has brought the total number of employees up to 750, of which approximately half are engineers or other technically trained personnel.

Safety and Service Emblems

Fewer accidents mean more man-power. Safety Emblems for various lengths of "no lost time" service instill the competitive spirit so necessary for employee cooperation.

Service Award Emblems for 1, 3, 5, 10, 25 and 50 years of continued employment, increase loyalty and reduce labor turnover.

Easily seen and readily recognized emblems such as those illustrated above are paying big dividends in many large plants. Also identification Badges, Plaques, Athletic Medals, Trophies, etc.

WRITE TODAY!

METAL ARTS CO., Inc.
Dept. 13 Rochester 5, N. Y.

SPECIALIZING IN "BETTER-BUILT"

HEAD & EYE PROTECTION

FOR OVER 25 YEARS

There is a DOCKSON distributor near you. Name on request.

Write for our complete safety equipment catalog.

Dockson CORPORATION
3839 WABASH • DETROIT 8, MICH.

LEARNING THE

SPONTANEOUS IGNITION

A FIRE, caused by spontaneous ignition in a pile of oily rags, damaged time clocks stored in an adjacent area. Two sprinkler heads operated and extinguished the fire.

Metal containers with self-closing cover should be provided for disposal of oily rags and waste.

DOUBLE ACCIDENT

THE method by which one accident engenders another was demonstrated recently, when a structural steel worker was caught and pinned by a crane. In attempting to assist the injured man, a fellow workman was brushed off a girder and fell about 20 feet striking a railing. He was treated for contusions of the chest. A little more caution on his part might have prevented his accident.

GEYSER OF OIL

AN EMPLOYEE accidentally dropped a heavy casting and broke a lubricating oil line on a diesel engine at a test stand. Oil spurting out at 70 pounds pressure was ignited by the hot exhaust, causing a very intense fire. The oil pump was shut down within two minutes but a 500-gallon surge tank on the line continued to supply oil until the tank emptied. Although sixty-three sprinklers opened, and firemen extinguished the blaze in about 30 minutes, $7500 damage resulted.

Accessible push-button controls are needed at test stands to shut down fuel and lubricating oil pumps quickly. Electric solenoid valves should be provided on surge tanks and interlocked with the pump motors so that shutting down the pump will also shut down the flow of oil from the tank.

THROWING SHOVEL

CARELESS handling of tools has always been a major problem in industry. A worker in the hold of a ship asked for a shovel. Another employee obliged by tossing two shovels down the hold, striking the man in head and face. Tools should be handed or lowered with tackle, never thrown.

SPRINKLER DELAY COSTLY

DURING the construction of a new building at a Connecticut plant, a spark from a cutting torch flew inside an adjoining, unsprinklered wooden storehouse. Fire immediately broke out in paper, burlap, crude rubber and carbon black. Despite quick discovery, prompt alarm and good fire-fighting by the public fire department, the fire destroyed half the building and caused damage estimated at over $50,000—all in about 15 minutes. Sprinklers were to have been provided but the installation had been delayed. If you are planning sprinklers, put them in now. Fire won't wait.

GASOLINE TRUCK FIRE

WHILE a gasoline truck driver was loading his truck, flames engulfed the area around the dome opening. The driver shut off the flow of gasoline and started to back the truck away from the fill stems. This maneuver caused the fire to spread over the top of the tank.

Employees in the plant endeavored to extinguish the fire using a foamite extinguisher, *which failed to operate*. Before water could be applied, the fire department arrived and extinguished the fire. The fire was apparently caused from a static spark, and the action of the driver in moving the truck served to spread it. Valuable time was lost when the extinguisher did not operate. See that extinguishers are serviced at regular intervals, so they will be ready when needed.

FATAL FLASH-BACK

A FATAL accident occurred when a fireman threw a shovel of coal into a boiler. An oily piece of waste rag was mixed in with the coal. This ignited and flashed back out of the fire door and the fireman was so badly burned that he died later. The report of the accident points out that firemen should always stand to one side of the fire door when stoking, so that they will be out of danger if a flash-back occurs.

UNGUARDED DECK HOLE

AN UNCOVERED deck hole served as a pitfall for a rigger's helper, who was not paying particular attention to where he was going. In falling through, he sprained his ankle and bruised his leg. Manholes and deck openings should be covered if no work is going on, and guarded if it is necessary to leave them open. Also, it is a good idea to watch where you're going.

IMPROPER USE OF VOLATILE LIQUID

THE employee had a small beaker of benzol in his hand with which he was cleaning a viscosity flask. A draft from an open window carried the benzol fumes to an open flame of a water distillation machine about five feet away. The fumes flashed back to the beaker, causing the employee to throw the beaker, spilling the flaming contents over his face and body. Before being able to extinguish flames with fire blanket, the injured had swallowed enough flame to cause death 30 hours later.

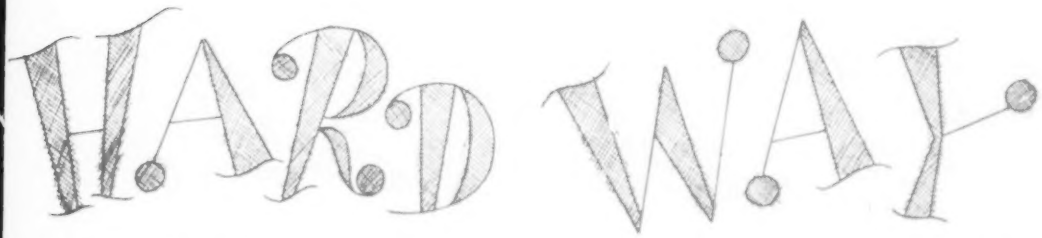
This accident was the result of (1) use of a volatile liquid to clean distillation equipment, (2) cleaning equipment near open flame and, (3) failure to realize hazard.

The following precautions have been taken to prevent a recurrence:

1. Use of carbon tetrachloride as agent with instructions as to handling.

2. Replacement of open flame water distillation equipment with vapor proof electrical equipment.

3. Educating employees as to necessity of safety vigilance.



Safety Goes to Sea

(Continued from page 20)

screen doors are fitted throughout as required.

A sprinkler system of Grinnell pattern with a detection panel in the Fire Station on "B" deck is installed throughout the ship. The working pressure of the system is 120 lbs. per sq. inch. A CO_2 fire extinguishing system based on the Lux-Rich-Andio principle is also fitted to storerooms, etc. The fire detection cabinet for this system is in the fire station in order to give the alarm of possible fire. Fire alarms are connected to a master alarm incorporated in the sprinkler detection panel.

The ship's projection room is fitted with CO_2 gas chemical fire extinguishers and sprinklers. Quick release shutters over openings are also provided.

Fire fighting equipment includes complete smoke helmet outfits as well as several complete sets of self-contained breathing apparatus.

For Safety
Guardi-Ann Hat

Combines utmost protection and style. Exclusive patented features found in no other hat.

Write for Free Sample or Order Direct from us

$13.50 dz.

CHIC MAID HAT MFG. CO., Inc.
630 HIGH STREET
BUFFALO 11, N. Y.

Fire fighting equipment in the boiler room is extensive and is of the foam type. Foam can be sprayed over the entire double bottom tank top. Chemical hand fire extinguishers are fitted in the boiler room, together with foam branch pipes with flexible hoses to enable the entire boiler room to be covered, and there is a complete fire alarm warning system.

Lighting Equipment

The modern lighting is in keeping with the many other features of design which make the "Caronia" a shining example of skill and workmanship. The prevailing illumination in every public room is one of glare-free comfort, and many novel effects are achieved by illumination from specially designed fittings.

In each of the ship's main public spaces, a combination of fluorescent and tungsten lighting is skillfully employed to give adequate general illumination and necessary secondary light where required as an added precaution against the possibility of slipping accidents and falls. Throughout the ship, the lighting generally sets a high standard for maximum safety, utility and beauty. In accordance with requirements of the British Ministry of Transport, an emergency electric generating plant is installed in a compartment above the bulkhead deck. An emergency diesel generator is located on "A" deck, and with its air and battery starting arrangements will supply sufficient power for emergency requirements. Regulations for the electrical equipment as laid down by the Institution of Electrical Engineers, the requirements of Lloyd's Register of Shipping and the Ministry of Transport have all been exceeded in the "Caronia".

Sanitary Equipment

Ten sewage disposal plants collect the discharges from all sanitary fittings. The drinking water of the ship first passes through a filter and, before delivery to the distributing system, is sterilized by a special chemical process.

Ventilation and Heating

Provision has been made throughout all passenger accommodations for individual control of the temperature in each stateroom. In public rooms and entrance halls, the air is delivered through diffusers which are specially designed to eliminate drafts.

It is important to avoid noise disturbance to passengers from systems used for ventilation; and to insure this, the heating units and fans are of welded construction and designed for silent operation. In addition, fan rooms throughout the vessel are fitted with sound proof material in passenger and crew accommodations.

Air conditioning is applied extensively to provide passenger and crew comfort. In addition to air conditioned public lounges, the gymnasium, medicinal bath section, and five hospital wards and operating theatre are all supplied with conditioned air. On the "Caronia", conditioned air is admitted to the rooms through inlets arranged to conform to the decorative treatment and thus are not readily seen.

Walkway Safety

Public areas, kitchens, crew's quarters, companionways and entries are "surfaced" to provide maximum protection against the very common hazard of falls and slipping accidents. Where required, anti-slip walkway surfaces

February New Products

First-Aid Eye Kit
Cesco Goggle
Floor Mat
Scott Inhalator
Collapsi-Cot
Explosilite
Floor Machine
Microtrip

See pages 70–71

are installed and steps are designed with recognition of such important factors of protection as height of risers, stair nosings and covering: all carefully planned to reduce the incidence of falls. Adequate handrails of an approved design and height are provided for passengers and crew.

Restrained Luxury

Only a feature writer for the Sunday supplements can do adequate justice to the beauty of the "Caronia" whose public and private accommodations reflect the best in restrained luxury. The general conception of the decorative theme is a combination of light veneered surfaces of polished woods relieved with glass, metal and leather-covered panels. Passenger cabins are a far cry from the old-style bunk type cells; and the various lounges, dining salons, cinema theatres and places of public assembly represent the ultimate in dignified modern decor.

It is small wonder that considering the safety and protective features, as well as facilities for passenger comfort, the "Caronia" can be termed the ship that has everything—perhaps even monogrammed drool cups for those unfortunates who can only look with longing at her yacht-like lines.

Pictures on page 19 (top and lower left) by courtesy of Cunard White Star, Ltd.; page 19 (lower right) and page 20; Walter Kidde & Co.

New Firm Name

THE management of Safety Equipment Company, 1437 Brooklyn St., Detroit, Mich. announces a change in the company's name to Seco Safety Products Company. They maintain a branch at 319 Lake Michigan Drive in Grand Rapids, under the management of Hoyt Steffens, with complete stocks of safety products available for prompt delivery.

Dick Jones, formerly a member of the Detroit Sales group, was transferred to Chicago to manage a Seco branch in that city.

American Optical to Expand Research

PURCHASE of a 6-acre tract at Stamford, Conn., to create a research laboratory in the expansion of the research program of American Optical Company was announced recently by Dr. R. Bowling Barnes, vice-president in charge of research and development. The property includes a year-old building which will be completely remodelled for research purposes. Containing 13,000 square feet of floor space, the structure formerly housed the Webb Offset Company.

Dr. Barnes said the research activities to be conducted in the Stamford laboratories "will supplement and be in addition to research by American Optical Company at its headquarters in Southbridge, Mass., and at its scientific instrument division in Buffalo, N. Y. An entirely new scientific staff will be organized at Stamford to pursue work in fields related to the optical sciences and to scientific instruments, as well as research bearing directly on the company's products and processes."

"As a leader in its field," Dr. Barnes said, "American Optical Company is expanding its long-established research program in order that it may add to its contributions to human knowledge and progress. While the fields of the company's interest have long been explored by scientists, there remains a vast uncharted area in these fields and in others related to them.

"The purpose of the acquisition is to provide the most modern facilities for a group of scientists to pursue fundamental and applied research. Among the projects contemplated are basic scientific studies in physiological optics, plastics as optical components, glass chemistry, optical instrumentation, spectroscopy and microscopy."

ACCIDENT PREVENTION INSTITUTE

can help you prepare for a BETTER JOB

You can get ahead in Safety quicker if you're trained. Study in your leisure time at home, on your lunch hour, and learn safety engineering while you hold down your present job. Learn how to locate and correct hazards, how to conduct a safety meeting, why color is important in industrial plants. The home-study curriculum of ACCIDENT PREVENTION INSTITUTE covers all the important phases of safety engineering plus the fundamentals of heat, mathematics, civil engineering and related fields. This is your opportunity to get a first-class education in accident prevention. Write for full particulars. Act Now!

Accident Prevention Institute

Box 1796 Dallas, Texas

Study a complete course in safety.

STOP *Oily Floor Mishaps* with FULLER'S EARTH

TAMMS

Avoid costly accidents caused by slipping on oily or greasy floors! Reduce fire hazards! Replace sawdust or wood shavings with Fuller's Earth. Every shop and industrial plant where machinery is present needs this low-priced safety aid.

Fuller's Earth *absorbs* oil and grease — and it's non-inflammable. Write for FREE SAMPLE or trial order at quantity price.

Dept. RM-10, **TAMMS SILICA CO.**, 228 N. La Salle Street, Chicago 1

Inter-American Safety Council Elects

AT THE Annual Meeting of the Inter-American Safety Council, Inc., held at the Engineers' Club in New York, the following Officers and Directors were elected for 1949:—

President:—Mr. C. de Groot, General Traffic Manager, Pan American-Grace Airways, Inc.; *1st Vice President:* Mr. R. A. Hummel, President, Lone Star Cement Corporation; *2nd Vice President:* Mr. G. P. Sawyer, Vice President, Cerro de Pasco Copper Corporation; *Treasurer:* Mr. R. J. Farlow, Treasurer & Secretary, American & Foreign Power Company; *Asst. Treasurer:* Mr. Burr Wheeler, Vice President, Chili Exploration Company; *Secretary:* Mr. Harold J. Segrave, Secretary, Mine Safety Appliances Company; *Asst. Secretary:* Mr. H. N. McConnell; *Counsellor:* Mr. D. E. Grant, Grant, Exselen & Rorer.

The following Directors were named: Messrs. Ned H. Dearborn, President, National Safety Council, Inc.; J. S. Carson, Vice President, Colonial Trust Company; J. T. Wilson, Vice President, International Business Machines Corp.; L. C. Boos, President, U. S. Rubber Export Company; J. C. Leslie, Vice President, Pan American World Airways, Inc.; C. C. Batchelor, Vice President, International General Electric Co.; F. B. Griswold, Vice President, Lehigh Safety Shoe Company; W. G. Legge, President, Walter G. Legge Co., Inc.; R. W. Knight, Director Operations, American Airlines, Inc.; J. F. Harrison, Personnel Manager, Gulf Oil Corporation; Leroy Wilson, Personnel Manager, Creole Petroleum Corporation.

Capt. J. N. Parrott, the Executive Manager of the Council in submitting his annual report to the members reported that despite the difficult financial conditions of the Central and South American Republics, the income of the Council for 1948 was 51% greater than in 1947. New membership for 1948 was increased by 58% over that of 1947. Sales of the Council's publications to members in addition to their regular service, was 13% greater than similar sales in 1947.

Twenty-two industrial companies were awarded the Council's Industrial Safety Award Plaque for having the lowest accident frequency rate in the various industrial categories.

Twenty-two recognized airlines operating in Mexico, the Caribbean Area, Central and South America were awarded the Council's Aviation Award Certificate for having operated during the year without an accident or fatality to their passengers or crews.

Four Special Aviation Awards were made to companies as follows:—

KLM (West Indies Division)—5 years—1943 to 1948

Lloyd Aéreo Boliviano—5 years—1943 to 1948

Transportes Aéreos Tampico—7 years—1941 to 1948

Cia. Aeronáutica Uruguaya—10 years—1939 to 1948

Eye Conference

THE National Society for the Prevention of Blindness will hold a Three-Day National Conference, March 16, 17 and 18, 1949, at the Hotel New Yorker, New York City. The theme of the meeting will be The Battle Against Blindness—The Next 40 Years, and the following subjects will be discussed: Eye Problems in Middle Life; The Eyes of Children and Young Adults; Vision in Industry; Medical Advances in Sight Conservation; Glaucoma—A Community Problem.

Persons directly or indirectly concerned with eye health and safety will find this conference of interest. Details concerning the program may be obtained by writing directly to the Society at 1790 Broadway, New York 19, N. Y.

The Future Shows

Tampa, Fla.

Tenth Annual Southern Safety Conference, March 6–8. (Hillsboro Hotel.) Braxton B. Carr, secretary-treasurer, 2120 First Ave., North Birmingham 3, Ala.

Houston, Texes

Tenth Annual Texas Safety Conference, March 9–10. (Rice Hotel) George Clarke, managing director, Texas Safety Association, Inc., 815 Brown Bldg., Austin, Texas.

Boston, Mass.

Twenty-eighth Annual Massachusetts Safety Conference, March 14–15. Edgar F. Coppell, president-director, Massachusetts Safety Council, 31 State St., Boston 9, Mass.

EVER-KLEAR COVER LENS

NINETEEN YEARS OF PROVEN SERVICE

Employ *Ever-Klear Lens* for better welding

Clear Vision
Comfortable Vision

Is what EVER-KLEAR Cover Lens gives you.

You can't do your best welding unless your vision is clear and comfortable. Thousands have found this to be true after using EVER-KLEAR Cover Lens. They give a keen sharp view of the weld always. They do not pit.

Size 2x4½" for arc-welding shields ..... $ 2.40 per dozen
Sizes 46½ to 50 M.M., for goggles ..... .35 per pair

Contact your nearest Jobber. If they cannot supply you, send order direct, giving Jobber's name.

F. R. FAULK, DISTRIBUTOR
405 PENN AVENUE ROOM 803 PITTSBURGH 22, PA.

THE Future SHOWS

(Listings start on preceding page)

Philadelphia, Pa.

Fifteenth Annual Philadelphia Regional Safety Conference and Exhibit, March 15–16. (Bellevue-Stratford Hotel.) Walter W. Matthews, managing director, Chamber of Commerce Safety Council, N. E. Corner 17th & Sansom Sts., Philadelphia 3, Pa.

Washington, D. C.

Spring President's Conference on Industrial Safety, March 23–25. William L. Connolly, chairman, coordinating committee, U. S. Dept. of Labor, Washington 25, D. C.

New York, N. Y.

Nineteenth Annual Greater New York Safety Convention and Exposition, March 29–April 1. (The Statler Hotel). Fred F. Beik, general chairman, Engineering and Inspection Division, Bankers Indemnity Insurance Co., 90 John St., New York 7, N. Y.

Toronto, Ont.

Annual Convention Industrial Accident Prevention Association, Apr. 4–5. (Royal York Hotel.) R. B. Morley, general manager, 600 Bay St., Toronto 2, Ontario.

Charleston, W. Va.

Fifteenth Annual West Virginia Statewide Safety Conference, April 6–9. (Daniel Boone Hotel) W. C. Easley, managing director, West Virginia Safety & Health Council, Inc., 316 Masonic Bldg., Charleston 1, W. Va.

Columbus, Ohio

All-Ohio Safety Congress, April 12–14. James H. Fluker, Division of Safety and Hygiene, Industrial Commission of Ohio, Columbus, Ohio.

Chicago, Ill.

Twenty-sixth Annual Midwest Safety Conference, May 3–5. (Sherman Hotel) Joseph F. Steeh, manager, 10 N. Clark St., Chicago 2, Ill.

Winston-Salem, N. C.

Nineteenth Annual North Carolina Statewide Industrial Safety Conference, May 4–6. (Robert E. Lee Hotel) H. S. Baucom, Safety Director, North Carolina Industrial Commission, Raleigh, N. C.

Syracuse, N. Y.

Central New York Safety Conference and Exposition, May 9–11. (Hotel Syracuse) Walter L. Fox, manager, Safety Division, Syracuse Chamber of Commerce, 351 S. Warren St., Syracuse, N. Y.

Bridgeport, Conn.

Fourth Annual Connecticut Conference on Industrial Safety, April 14. (Hotel Barnum) Exhibit of safety equipment.

Pittsburgh, Pa.

Twenty-fourth Annual Safety Engineering Conference, April 19–21. Harry W. Brainard, executive manager, Western Pennsylvania Safety Council, Chamber of Commerce Building, Pittsburgh 19, Pa.

Baltimore, Md.

1949 Maryland State-Wide Safety-Health Conference and Exhibit. (Lord Baltimore Hotel). June 7–8. Joseph A. Haller, executive chairman, Equitable Bldg., Baltimore 2, Md.

Chicago, Ill.

Thirty-seventh Annual National Safety Congress and Exposition, (Stevens Hotel), Oct. 24–28. C. H. Miller, Exhibit Manager, National Safety Council, 20 N. Wacker Dr., Chicago 6, Ill.

SAFETY . . . DURABILITY and COMFORT!

K71 — LOW
K81 — HIGH
Black ELK with Neoprene Soles

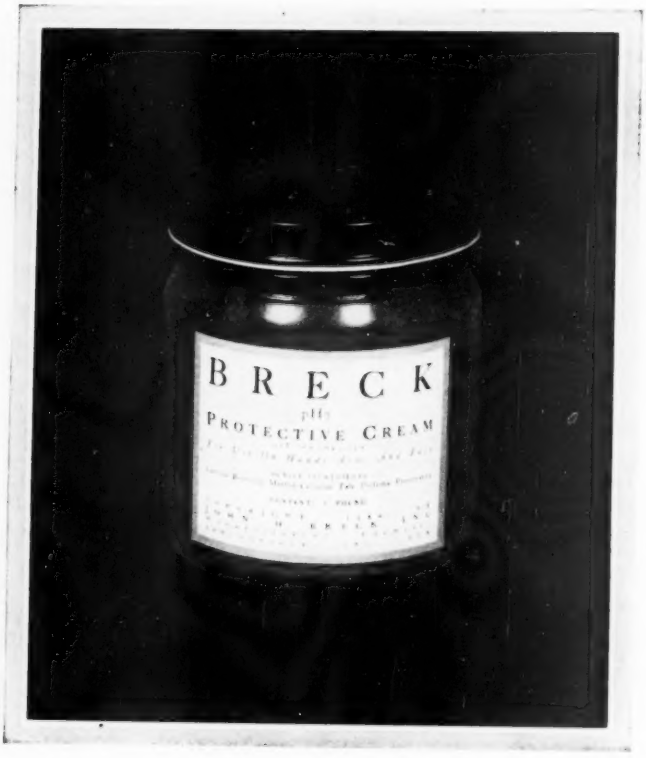
Knapp SAF-TEST Shoes

Your men will enjoy, as have thousands of others, the true Cushioned Comfort of Knapp patented Aerotred Construction! Too, the Austempered Steel-Toe Boxes . . fully meeting the testing requirements of American Standards Association . . assure maximum protection . . and Knapp built-in quality means plenty of long satisfactory wear. No wonder Knapp Saf-Test Shoes are preferred for safety, durability . . and for comfort that keeps your workmen foot-fresh and efficient through long hours of standing.

Sizes 5 to 12, widths C, D, E and EE

For full information write Mr. W. C. Sprong, Saf-Test Dept., Knapp Brothers Shoe Mfg. Corp., Brockton 61, Massachusetts

B R E C K



Breck pH7 Protective Cream

Protecting the hands at work will help to prevent skin irritation. Breck pH7 Protective Cream shields the hands and arms from dirt and grime. Harsh cleansing agents are not necessary at the end of the day as Breck pH7 Protective Cream may be washed off with mild soap and water. Loss of time in industry can be prevented by protecting the hands of workers.

industrial Hygiene

ASSOCIATE EDITOR
JACOB A. GOLDBERG, A.M., Ph.D.

How Big is Our Job?

The Industrial Hygiene Foundation Meeting in its thirteenth annual session turned its spotlight on many timely hygiene problems.

INDUSTRIAL health specialists joined with representatives of industrial management late last year in the thirteenth annual session of the Industrial Hygiene Foundation. The two-day meeting was held at the Mellon Institute in Pittsburgh, headquarters for the Foundation. The numerous open discussions were supplemented by several closed conferences for specialists. The combination of these two types of general and technical meetings gave broad scope to the subjects discussed and is indicative of the thorough job which the Foundation does in furthering the solution of all types of industrial hygiene problems.

Andrew Fletcher, President, St. Joseph Lead Company, Board Chairman, Industrial Hygiene Foundation spoke on "How Big Is Our Job." The main points of Mr. Fletcher's talk were that the impact of the bi-partisan commitment of this country to defense is to be increasingly felt by industry along with the growing interest of employer and employee in better working conditions. Industrial Health is a challenge to industry to take the initiative in reducing the twenty-seven billion dollars a year cost of sickness and disabilities. Mr. Fletcher feels the initiative should come from industry but that government cooperation is necessary to discourage skimping by some producers on health and welfare expenditures.

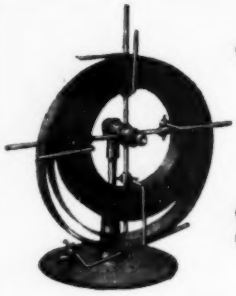
Thomas Parran, M.D., Dean, New Graduate School of Public Health, University of Pittsburgh, emphasized the staggering economic losses through illness and disability which come back to industry in the form of voluntary contributions and taxes and the wide gap between what we know and what we do with the knowledge accumulated in the health sciences. He hopes to see the profits and costs of industrial health made so visible as to convince the most hard boiled corporate director and worker and to see the barriers of distrust between managements and workers give way to that mutual trust and understanding necessary for mutually profitable efforts.

Atomic Energy Problems

John McMahon, Managing Director of the Foundation, stressed the fact that the breadth of problems from benzol and eye protection to supersonic waves and radioactive atoms (used now in over 1,000 research projects in this country) is indicative that the job is bigger every year with the onrushing developments in science and in social changes.

John Z. Bowers, M.D., Chief of Section on Medicine, U. S. Atomic Energy Commission, spoke of the good things to come from atomic energy and the successful efforts to safely handle the isotopes in the thousand industrial and educational research labs. He explained the hazard existed not in the radioactivity per se but in the quantity of radioactive material to which one is exposed. The quantities released to industry in isotopes are small and easily used if eternally vigilant safe practices are followed.

Theodore Hatch, Research Director of the Foundation, spoke briefly on "What the Foundation Is Doing." Direct plant studies, which constitute the major activities of the staff, ranged from brief studies of specific hazards to those involving practices, policy and coordination of plant and industry wide health services. Research is expanding to answer many new



"Speed with Safety"

LITTELL AUTOMATIC CENTERING REELS

LITTELL Reels are automatic centering—for handling coil stock. They save time. One coil, hundreds of feet long, feeds steadily instead of dozens of short strips. They save material. Economical dove-tailing of blanks throughout the entire length of coil.

Littell also makes Vacuum Pickers for keeping hands out of "danger zone," and Air Blast Valves for air ejection of stampings from presses. Also Roll Feeds, Straighteners, Cradle Reels, Scrap Winders, etc. REQUEST BULLETINS

F. J. LITTELL MACHINE CO.
4135 Ravenswood Ave., CHICAGO 13, ILL.

problems and give better answers to old problems. A shift in emphasis is being made from curative to preventive industrial medicine and a broadening of the program to include physiology and psychology. A growing concern with the problem of safe disposal of gaseous and particulate wastes resulted in more studies this year in atmospheric pollution which showed the need for more factual data for determining action.

Dust Control

C. Richard Walmer, M.D., Secretary of the Foundation's Medical Committee and W. C. L. Hemeon, Secretary of the Engineering Committee, reported that the closed sessions discussed T.B., physical exams, the Industrial Congress in London; the removal of acids and dusts by scrubbing systems, dust collectors, the mechanics and economics of industrial health problems; heat, CO, and ventilation for welding. One of the participants of these meetings said that exhaustive trials proved a bag room filter set up and a fog spray system, using 60 lb. water and 60 lb. air, was found to stop submicron dust particles. Some stated they knew the cause of the Donora tragedy and their company's were extremely worried as Los Angeles and parts of West Virginia have had similar troubles. The above fog system was believed to be an answer.

At the meeting: Andrew Fletcher, left, chairman of the board of directors of the Industrial Hygiene Foundation, and John F. McMahon, right, confer with Dr. James G. Townsend, chief of the division of industrial hygiene for the United States Public Health Service.

Dr. Townsend, Medical Director of the U. S. Public Health Service, spoke of the national concern for air pollution as well as water pollution and announced the beginning of a study of the entire Monongahela valley air pollution.

The Individual Worker

Lillian Gilbreth, Sc.D., Consultant, emphasized that the machine can be an extension of man's personality and his enjoyment and effective participation in life, if the human sciences speed up to close the lag between them and the so called exact sciences, and if personnel departments do not become so engrossed in their systems, they forget the man on one extreme, and on the other extreme, forget the job in their desire to satisfy the man. She stressed the team work of all is required to improve the job and select the best man for the job. Mrs. Gilbreth also observed that great progress is needed in designing and arranging the machine and equipment so that the man can easily and comfortably use it to most effectively utilize his time and energy without costly fatigue or mishap.

M. M. Shafer, M.D., Medical Director Frigidaire Division, General Motors Corporation, described their job analysis showing definitely the physical work requirements of each on 1200 current jobs and the fitting of men to jobs in accordance with these requirements, as an important phase of industrial health.

T. G. Klumpp, M.D., President Winthrop-Stearns, Inc., discussed "The Older Worker—Industry's Great Problem of the Future." He said that in just 31 years, we will have 60,000,000 persons 45 years of age and over and 21,000,000 will be 65 years old and over. He challenged the unselective compulsory requirement on a calendar age basis, and noted the growing importance for the development of more thought, research, and funds to improve the lot of the aged and chronically ill.

Health Legislation

Theodore C. Waters of Mullikan, Stockbridge & Waters, spoke on Industrial Health Legislation, emphasizing that all the state legislatures except Ky.,

La., Miss., and Va. will meet in regular session and all members should follow the legislation.

The state of Mississippi enacted a Workmen's Compensation Law, which was approved April 13, 1948, and became effective January 1, 1949; this is the last state in the Union to enact such a statute.

No new occupational disease compensation statutes were enacted during the year.

New Jersey enacted Senate Bill 306, which extends the time within which an employee must give notice to his employer that he has contracted a compensable occupational disease and time within which he must file formal claim for compensation with the workmen's compensation bureau. Prior to this amendment an employee had five months from the date when he ceased to be subject to exposure to an occupational disease hazard in which to give his employer notice; by the amendment notice is effective if given "within 90 days after the employee knew or ought to have known the nature of his disability and its relation to his employment." Under the law effective prior to the amendment an employee was required to file claim for a compensable occupational disease within one year after the date on which he ceased to be exposed to the occupational disease for which compensation was claimed; by the amendment the claim must be filed within two years after the date on which the employee ceased to be exposed to the compensable occupational disease or "within one year after he knew or ought to have known the nature of his disability," whichever period is later in duration. However, all claims for compensation for compensable occupational diseases are barred unless petition for same is filed with the workmen's compensation bureau within five years after the date on which the employee ceased to be exposed in the course of employment with the employer to the occupational disease.

During the present year occupational disease legislative commissions have been appointed in the states of Vermont, Maryland, New York and Montana, with directions to report their findings prior to the 1949 legislative sessions in those states. To date no reports have been submitted, but for those member companies operating in these states it would be advisable to keep informed as to the activities of these commissions.

The State Department of Health of New Jersey has prepared a proposed industrial hygiene code, and in January of this year public hearings were held upon that matter in Trenton. No final action was taken by the Department, and there is no indication as to what their ultimate purpose may be with respect to its adoption.

Industrial Hygiene Codes were discussed by W. P. Yant, Director of Research, Mine Safety Appliances Co. The usefulness of industrial hygiene codes is inherent in their compilation of good knowledge and description of good practices, their contribution to education and understanding, the basis they provide for measuring and comparing the results of endeavor, and

This drop-forged ring is permanently attached to each ACCO Registered Sling Chain. All essential identifying information shown on both sides of Ring, as illustrated, protected by outer flange.

Certified

BY AMERICAN CHAIN

"The Nation's Chainmaker"

We believe that the best way to build safety into Sling Chains is to make each one individually—to inspect it and test it as though it were made to special order.

From that belief came the idea of ACCO Registered Sling Chains. Each sling chain made by AMERICAN CHAIN is Registered. Each one carries a Certificate of Test and Warranty. Every one is identified by a permanent metal ring on which is stamped all essential identifying information.

***SEND** for this catalog which contains information on how to select, use and care for sling chains. It is* **DH-80.**

York, Pa., Chicago, Denver, Detroit, Pittsburgh, Portland, San Francisco, Los Angeles, New York, Philadelphia Bridgeport, Conn.

ACCO

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

In Business for Your Safety

Stanzoil

Red Neoprene-Coated Cotton Gloves

Low cost hand safety ...with comfort

Liquid-tight Stanzoil coated canvas gloves cost you no more per day of service but give you a bonus of hand safety. Red color keeps workers alert to hand danger. Tough chemical-resistant Du Pont neoprene protects in harmful materials, wet or dry — and wears extra long in any service. Where gloves are needed, it pays you to buy Stanzoils. Write today for informative catalog.

Synthetic Rubber Division
The Pioneer Rubber Company
640 Tiffin Road Willard, Ohio, U. S. A.
Los Angeles

STANZOIL BY PIONEER

OVER *30 Years* OF QUALITY GLOVE MAKING

their effect whether voluntary or legal in attaining good practice. Owing to the privileges of the individual states to develop codes along patterns of their own choosing, the various state codes vary widely in concept and content. This creates a confusing and undesirable situation which impedes the progress of industrial hygiene activity. The creation and general adoption of an acceptable, uniform code by the states should be looked upon with much favor by all concerned. Such a code is nearly ready for publication by governmental hygienists as an unofficial model code.

Picture by courtesy of the Industrial Hygiene Foundation.

New Type Lead Detector

THE Optical Society of America was told about a new instrument capable of detecting lead in the air in amounts at least as low as one part in 20 million.

Henry Aughey of the Chemical Department of E. I. du Pont de Nemours and Company, who described the instrument, said it gives promise of adaptation for detecting in the air other toxic metals encountered in certain manufacturing processes. The instrument's extreme sensitivity can be maintained, in routine operations. Determinations of lead content can be made almost instantaneously.

In the manufacture of various lead compounds, it is necessary that a close check be maintained to make certain that toxic amounts of lead or compounds of lead have not escaped into the atmosphere. To avoid danger to workers, amounts of lead in the air must be kept at extremely low levels. The instrument is capable of detecting lead in concentrations below one part in seven million, on a weight basis, the maximum safe concentration allowable. It was developed as additional insurance for the highest possible degree of safety in tetraethyl manufacture. Although the device has been tried only for lead, similar sensitivity in detection of other metals, both in elemental and combined forms, is to be expected.

To aid in visualizing the sensitivity of the instrument in detecting one part of lead in 20 million parts of air, it was observed that one ordinary BB shot, ground into extremely fine powder, would have to be dispersed in about 500,000 cubic feet of air to give content that low.

This means that lead can be detected and danger to employees avoided, long before the amount of lead in the air reaches dangerous proportions. The instrument is mobile; it may be wheeled to all parts of the plant for regular air inspections. With an early model, determination of lead content took about an hour, but with an improved modification, detections can be made virtually instantaneously and continuously. The device is far more sensitive, and faster, than all previously known orthodox chemical methods.

In theory, the new instrument is quite simple, Mr. Aughey pointed out. Air from the area under investigation is drawn through a tube in such a way that it passes through an electrical spark discharge, with the result that it emits light. Light given off by any particular metal in a spark discharge is different from that given off by other metals, just as the fingerprints of one person differ from those of all other persons. All the light coming from the spark discharge is passed through a quartz spectrograph where it is broken up into its different component parts, just as ordinary light is broken up into a spectrum of rainbow colors by passing it through a glass prism. If any lead in the air is drawn through the spark, it emits ultraviolet light which shows up as a narrow band in one particular spot on the spectrum.

In the original instrument, the band of light which resulted from the presence of lead was allowed to fall on a photographic plate, which was subsequently developed. The density of the resulting image was a measure of the amount of lead present in the air. In a later modification now employed, the band of light caused by the presence of lead in the air is passed into a photoelectric Geiger counter, specially manufactured by the North American Philips Company and similar to the device used for measuring radioactivity. This gives rise to a pulsating current of electricity, the strength of which depends upon the intensity of light going into the photoelectric counter. The intensity of this light, in turn, depends upon the amount of lead in the air which was passed through the spark discharge.

If You Use Solvents . . . . . Even Once in a While

THE "one-time" user of solvents is among the more frequent victims of solvent accidents, case reports indicate. Apparently the cause is unfamiliarity with the possible hazards, particularly vapor poisoning, and the precautions necessary to avoid trouble.

In a recent instance, several laborers in a plant had to remove grease from the gears of a large mill prior to its being dismantled. The men soaked rags in the solvent which was handled in open buckets and then used the rags to wipe off the grease. The work was done in a large open room with general ventilation but no local ventilation. The men worked at the job for about 2½ hours one day and about 7½ hours a second day. All but one of the men stopped about every half-hour and left the vicinity of the work to smoke. The one man took no rest periods but worked steadily. On the third day, after about 5 hours on the job, he complained of dizziness and nausea, had to stop working, and subsequently became seriously ill, requiring hospitalization for 20 days.

To eliminate all possibility of solvent illness, workmen should be prevented from inhaling solvent vapors even during the single job requiring not more than an hour or two. If the work cannot be moved outdoors or to an area where the vapors will be removed by suitable mechanical ventilation, gas masks or supplied-air respirators approved by the U. S. Bureau of Mines should be worn by the men. The solvent should be used from closed containers and solvent-saturated rags should be dried outdoors or where the vapors can do no harm.

If any of the workers develops symptoms such as dizziness, stomach upset, nausea, or a feeling of weakness, he should be removed from the job immediately and sent to a physician with information about the kind of solvent he was using. Some individuals, particularly those who are addicted to alcohol, are especially susceptible to solvent illness, according to Safety Research Institute.

REDUCE FATIGUE and PROMOTE SAFETY WITH AMERIFLEX Hardwood Link MATTING

Links are held on galvanized steel springwire framework. Lies flat. Follows contour of the floor. Beveled edges. Can be rolled or folded.

ALSO

- AMERICAN COUNTER-TRED MATTING
- TUF-TRED TIRE FABRIC MATTING
- NEO-CORD OIL AND GREASE RESISTANT COUNTER-TRED MATTING
- EZY-RUG RUBBER LINK MATTING
- PERFORATED CORRUGATED MATTING

For prices and folder, "A Mat for Every Purpose" write

AMERICAN MAT CORPORATION

"America's Largest Matting Specialists"

1744 Adams St., Toledo 2, Ohio

Keeping the Dust Count Down

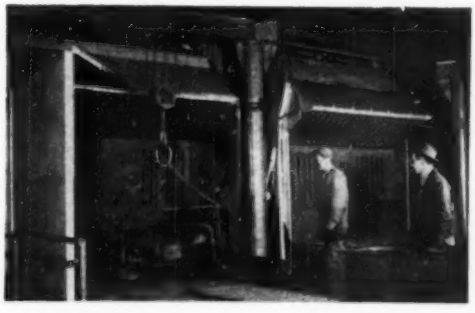
INSTALLATION of new mechanized equipment at Allis-Chalmers Mfg. Co., Milwaukee, has helped to materially improve working conditions in the company's #1 and #2 foundries.

In addition to a portable motive-type speed slinger and a stationary sand slinger in #1 foundry, a three unit wet dust collector has been added. Equipped with dust and smoke collector hoods behind shakeouts, the system has a capacity of 18,000 cubic feet of air per minute. A water spray is used to wash the exhausted air. As the water drains off, the dust settles in a sludge tank and is removed. A 6 by 4-inch Allis-Chalmers process pump feeds water into the collectors for reuse.

In #2 foundry, new exhaust systems are operated by four electric motors and have a combined suction capacity of 53,850 cubic feet per minute. They service two shakeout machines, the hot sand handling equipment and the sand mullers.

According to the hygiene section of the company's health and safety department, which makes dust counts regularly, the improvements make it possible to keep dust at a level considerably below that permitted by the Wisconsin Industrial Commission.

Picture by courtesy of the Allis-Chalmers Mfg. Co.



Dust and smoke collector hoods behind these two shakeouts have a capacity of 18,000 cubic feet of air per minute, provide better conditions.

THE INDUSTRIAL Nurse

EDITOR
ROSAMOND J. WEBSTER, R.N., A.M., Ph.D.

Proper Perspective

THERE is an old tale about three workmen who were engaged in a building operation. Each in turn was asked what he was doing. The first said "I am earning my living." To the same query the second answered: "I am dressing a stone." And the third to whom the same question was put and who was doing the same work as his two fellow workmen responded: "I am building a cathedral." Human beings are divided into various categories and perhaps this tale is a good representation of the types of workers we have always had. It may be somewhat difficult to decide the percentages for each group, though the plant that has a high percentage of the third, and of the second category as well, is indeed effectively served. Sometimes of course, the distribution is not altogether decided by the caliber of the workers—management and the various representatives of administration, superintendent, foremen, personnel, executives and staff, medical and nursing personnel are responsible for the workers' attitudes and state of mind. The policies followed by these persons in their relations with the workers may in some part at least swing the pendulum to the right or to the left, to a minor degree or to a more severe extent. Skilled administrators in all branches of industry are well aware of these facts. With the high rate of employment, the large labor costs, the high costs of training competent personnel, financial losses and interruption of production caused by a high labor turnover, the increasing age of the population as a whole—all of these and others as well, spell out the need for continual attention to these factors in worker mentality and perspective.

When and What to Tell

A COMMON complaint of many patients in hospitals and clinics can best be summed up in the following words: "They don't tell you anything." Perhaps this is not as true in the case of private patients as it is for ward and clinic patients. But the latter are also entitled to such information as a competent physician deems it desirable to impart to his private hospital or office patients. It is the recognized responsibility of professional personnel to explain in simple terms the nature of the ailment, the treatment prescribed and to be applied, and methods of prevention of recurrence of the particular ailment. This is nothing new. About 40 years ago a distinguished physician in a famous Boston hospital found many of his hospital and clinic patients upon whom much time and money had been spent failing to show the expected recovery rates. Careful study soon revealed the reason. The patients had been handled as so many objects—no attempt had been made to educate the patient or his parents about the nature of the ailment, treatment prescribed and methods of carrying out the treatment. In industry such failure may lead to dissatisfaction, complaint, hesitancy or even refusal to report to the medical department. It all ties in with the need to regard the worker, whatever his complaint, as an individual in trouble, whether his complaint is always warranted or not. The educational aspects of industrial medical and nursing services can never be slighted. When they are "they don't tell you anything (or nuttin')" becomes a common refrain.

Difference of Opinion

IN THE December issue mention was made of the report by the Federal Security Administrator on "The Nation's Health." This was a background discussion of the proposal for a national health insurance plan. As was indicated, there is much difference of opinion as to the facts in the case. For instance, the Brookings Institute of Washington has issued a report in which some of the conclusions seem to run counter to statements from other sources. Some of the conclusions of the Brookings report are as follows: (1) Probably no great nation in the world has among its white population better health than prevails in the United States. (2) The United States under its voluntary

148,920 hours of honor

Yes, over 17 years of professional use and respect in offices, clinics and hospitals ... in BURN THERAPY.

CARBISULPHOIL COMPANY
3114-20 SWISS AVENUE, DALLAS, TEXAS

ANTISEPTIC • ANALGESIC
FOILLE
EMULSION • OINTMENT
*You're invited to request samples and clinical data.

system of medical care has made greater progress in the application of medical and sanitary science than any other country. (3) The non-whites in the United States have materially poorer health than the whites, but the evidence does not indicate that this condition is primarily or even mainly due to inadequacy of medical care. (4) The advances in health among both whites and non-whites that have been made in the United States in the past 40 years do not suggest basic defects in our system of medical care. (5) Present medical care in the United States compares favorably with that which existed in other leading nations prior to the Second World War. These are but a few conclusions of the Brookings report. Many others are included. With the current pressure for the adoption of a health insurance plan, and the possible effects on industrial medical service as well as upon medical and nursing services as a whole, it seems warranted that all professionally involved should read up on the subject, and follow the reports that will appear in the public press. England is now trying out national health insurance. Will we be next?

Horseplay

IT MAY or may not be appropriate to call the attention of industrial nurses to the question of horseplay among industrial workers. Perhaps there are few nurses in industry who have not been called upon for first aid service following the tripping of a worker, the throwing of some metal object, in the spirit of fun of course; the pouring of some hot liquid; and other playful antics during regular working hours or during the lunch period. The records of workmen's compensation claims give much evidence of this common occurrence, often resulting in serious injury and claims against an employer or his insurance carrier who are totally blameless. The whole subject was the topic of discussion at a joint labor-management conference in one of the heavy industries. It was suggested that employers and their proper plant representatives should assume the responsibility for preventing men from playing boys' games and tricks. It was reported that even some supervisors forget they are no longer youngsters and instead of setting a good example either start horseplay themselves or join with workers in carrying it on. Management representatives agreed that horseplay should be stopped whenever it made its appearance. They felt that workers unions could play an active role and exert a strong influence. Perhaps the ministrations of the industrial nurse when her services are called for when "boys will be boys" can serve as a good educational step. Anyway, it's worth trying at every opportunity—to discourage horseplay.

Successful Medicine

LORD HORDER, the distinguished English physician has recently noted in a public address that "successful medicine is sympathy armed with understanding." This is perhaps a simpler way of saying that the practitioner of medicine, and his professional aides as well, need training and understanding of what we now term psychosomatic medicine. Increasingly, general hospitals are installing trained psychiatrists and psychiatrically trained nurses and social workers in order to serve the patients more effectively. What the patient thinks and believes about his presumed ailment may be as important as the ailment itself. By that, of course, is meant that the ailing person's state of mind, fears, hesitations, indecision, may seriously affect his ultimate recovery. Those of us who have seen and worked with large numbers of mentally and emotionally disturbed patients readily appreciate the influence that can be exercised by an understanding, trained physician and similarly qualified nurse, both, as Lord Horder would have it, armed with sympathy as well. Statistically, it is recognized that a considerable percentage of our young adolescents and adults will sometime suffer from a severe mental or emotional state. That means that in every large establishment there are several men and women who are potential patients in need of sympathy and understanding. The staff of the medical and nursing services are in the best position to give this attention and service. The personnel department staff can likewise be of help.

Teeth Tell a Tale

MEN 26 to 35 years of age in industry and women under 25 generally have the most dental cavities. These were the findings in a recent survey by the Pennsylvania Bureau of Industrial Hygiene. The men in the indicated age group had an average of 1.03 cavities. The least cavities were found among men over 46, but they had the most extractions. The women under 25 had an average of 1.9 cavities. This decreased to about 1 cavity for each woman industrial worker 26 to 35 years of age. It was found again, as has long been recognized, that poor dental health is one of the major causes of inefficiency and loss of time from work; also, that defects of dental origin are one of the causes of ill health. It is interesting to note that following the program newly initiated in Pennsylvania, that of those workers examined and advised, at least 50 per cent followed at least 50 per cent of the recommendations made for dental correction. The slightly lower rate of defects for women cannot be fully accounted for. However, one reason may be the greater interest young women take in their bodily care and attractiveness. Pretty and healthy teeth is an objective of all young women. Literature on dental care and proper diet is available from several sources. Industrial nurses might contact their local and State departments of health for such publications for free distribution and for placement on the literature table in their offices.

Clinic to Aid Alcoholic Problem

IN RESPONSE to growing recognition of the problems of alcoholism in industry, the Yale Plan Clinic has started a new consultant service to assist industry with these problems. The new service will help industry in evaluating the loss in dollars and in production as well as in employee morale resulting from alcoholism.

"The alcoholic in industry is not the broken down derelict of the city streets," it was emphasized by officials of the Yale Plan Clinic. "He is the laborer in the yard, the skilled worker in the factory, the salesman, the clerk, the executive."

Under the new consultant service, the Clinic will assist industry in determining the extent of alcoholism within the company, especially early or incipient alcoholism which in the past has usually been hidden or denied. The Clinic will also advise on existing policies of discipline, of the industry in which alcoholism is involved. These will include policies on discipline, termination of employment, insurance and pension payments, labor-management relations, and health services. Educational information will be made available by the Clinic on such subjects as the nature of alcoholism, the distinction between drinking and alcoholism, early symptoms of the disease, and possible steps for its alleviation and prevention. And finally, the Clinic will recommend alternative possibilities for treatment of alcoholics who show good indications for rehabilitation.

A Serious Problem

As evidence of the seriousness of the problem to industry, Clinic officials pointed out that more than 50 per cent of the first 1,000 cases coming to the Clinic were employed in industry, and that more than half of the remainder had at one time been in industry. These clients were not urged to come to the Clinic by industry, nor had the Clinic at any time conducted a campaign in industry. These clients appeared voluntarily for help.

In view of the stigma attached to alcoholism and the fear of discharge from work if the situation were known, this number of voluntary appearances at the Clinic is viewed as only a fraction of the actual cases of alcoholism in the limited areas already served by the Clinic.

More dramatic losses in terms of efficiency and dollars was found among the highly skilled and experienced workers. These men and women, who at the age of 35 or 40 were approaching the peak of their value to industry, began to show outward signs of alcoholism. Warnings and threats about losing their jobs were followed inevitably by discharge.

"Not only is there a loss of a valuable man, but an industrial investment of perhaps 10 years has disappeared," according to the Clinic, "and in many cases the loss is unnecessary."

In dealing with the alcoholic in industry, various techniques may be utilized and different programs of rehabilitation proposed by the Clinic. In some cases the diagnosis reveals a poor prospect of recovery in the industry. Occasionally the individual is suffering from a condition of an entirely different nature and excessive drinking is merely an obvious symptom of that other condition. In the majority of cases of alcoholism in industry, however, prospects for rehabilitation are good, often without loss of time from the job.

The major aim of the Yale Plan Clinic consultant service will be to train specialists in industrial health, men in employment and personnel divisions, and members of company disciplinary boards to a recognition of the problems of alcoholism. In addition, these men will be given a knowledge of efficient steps to control alcoholic conditions and to avoid the present losses suffered by industry.

Selden D. Bacon, Association Professor of Sociology at Yale University, said that all branches of the Yale Plan Clinic together with the National Committee for Education on Alcoholism would participate in the new consultant service. Dr. George Lolli, Medical Director, and Raymond McCarthy, Executive Director of the Yale Plan Clinic, will be in charge of consultation, training, and the rehabilitation services. In the first year, the service will be limited to the eastern states.

free bulletins and catalogs · free bulletins and catalogs · bulletins and catalogs

New publications of manufacturers are offered by SAFETY ENGINEERING Reader Service Department as a convenience to executives. Featured catalogs, data sheets and technical bulletins present the latest information on protective products and equipment.

WASHROOM SANITATION

Liquid & Powder Soap Dispensers 1

American Dispenser Co.—4-page booklet describes 14 types of dispensers for liquid, lather and powder soaps. Included are manufacturing details, capacities, installation methods, filling operations and prices for each type of equipment. Styles include: combination shelf and soap dispensers, liquid dispensers, leak-proof lather dispensers, soap valves for all tank systems, and anti-caking powder dispensers.

SKIN PROTECTION

Hand Cleaners 2

L. E. Hicks & Son—New, 8-page folder gives, in outline form, a summary of the cost to industry of dermatitis, its prevalence in various branches of industry, and the methods of preventing it. Actual figures from the U.S. Public Health Service are cited and testimony is given to the effectiveness of SPUN-DERMA-C in fighting skin infection.

Liquid Hand Soap 3

The Gerson-Stewart Corp.—Interesting, 3-page folder presents the "Story of Liquid Soap." Booklet describes the raw materials used; shows how controlled manufacturing assures steady quality, and gives, in diagram form, the complete manufacturing process of soap-making.

FLOORING & FLOOR COVERINGS

Resurfacing Materials 4

Rock-Tred Corp.—New bulletin gives complete laboratory report on RESN-X which, the manufacturer states, is unaffected by most acids, fats, alkalies, oils, syrups, etc. This report lists the various acids, alkalies and other substances to which RESN-X is impervious.

GUARDS AND ACCESSORIES

Expanded Metal Guarding Materials 5

United States Gypsum Co.—Well illustrated, 26-page booklet describes EXPAND-X, an expanded metal from which machine guards can be fabricated. Booklet shows how this product may be used in making window guards, partitions & enclosures, grilles and floor treads. Technical data, buying information & typical applications are described thoroughly.

Power Press Two-Hand Tripping Device 6

Phoenix Mfg. Co.—New, one-page data sheet presents information on the SIMPLEX Safety Lock, a two-hand tripping device for power presses. The operation of this device is explained by illustrations and drawings. Interior view drawings show how the simple mechanism requires operators to remove hands from the working area before the ram can descend.

MATERIAL HANDLING EQUIPMENT

Powered Lift Trucks 7

Lift Trucks, Inc.—12-page bulletin discusses the points to be considered in selecting the proper lift truck. Skid loading, width clearance, underclearance, and overhang are covered thoroughly. Plant factors to be considered in establishing the size skid truck are also explained. Complete details and specifications on pallet and platform models of HYDRO-ELECTRIC Lift Trucks are given.

ELECTRICAL EQUIPMENT

Auxiliary Control & Power Batteries 8

Gould Storage Battery Corp.—New, 16-page catalog covers battery units for stationary use. Four complete lines of glass jar batteries, designed for standby service, emergency service, control, fire alarm, telephone, telegraph and other stationary applications, are presented. Technical data and engineering specifications cover 98 types of GOULD Stationary Batteries. Capacities in ampere hours at standard & special rates, dimensions, weights, etc. are tabulated.

LIGHTING EQUIPMENT

Illumination Levels Indicator 9

Holophane Co., Inc.—Extremely useful Illumination Levels Indicator is available to engineers who are responsible for providing proper working and safety area lighting. The indicator, consisting of two rotating disks, measures critical details and reflection factors in determining proper lighting for visual tasks. Indicator quickly calculates the optimum illumination levels required for specific visual tasks. Booklet of instructions shows method of operation, how to recognize critical details, how to measure critical details, how to measure reflection factors, how to determine safety levels, allowance for motion. Tables of reflection factors of commonly encountered materials are given.

FIRE EXTINGUISHING EQUIPMENT

Automatic Vaporizing Liquid Extinguisher Unit 10

Stop Fire, Inc.—New, 40-page booklet presents complete Underwriters' Laboratories Report on performance of the new, one-gallon automatic vaporizing extinguisher unit. This unit uses chlorobromomethane as the extinguishing medium and is pressurized with carbon dioxide. Booklet describes: general character, use, assembly, construction details, and marking of the unit. Complete report of examination and test record is given. Conclusions cover: design & construction, practicability, fire extinguishment qualities, and conformity. Detailed drawings explain operation of extinguisher and describe the various tests made before U.L. Approval was granted.

FIRE PREVENTION EQUIPMENT

Magnetic Separating Equipment 11

Dings Magnetic Separator Co.—New, 4-page bulletin describes DINGS Perma-Plate Al Nico Magnets for removal of harmful tramp iron from food, chemicals, coal, foundry sand, etc. Bulletin shows how magnets can be installed in or above metal chutes, ducts, pipes, spouts, conveyor belts and feed tables, where extraction of tramp iron is necessary for protection against fires, explosions, machinery damage and product contamination.

Magnetic Drum Separators 12

Eriez Mfg. Co.—Colorful, 3-page folder explains and illustrates new line of ERIEZ Permanent Magnetic Drum Separators. The bulletin gives complete engineering data and tables of operating capacities for 12", 18" and 24" magnetic drums. Phantom photographs show internal construction and placement of the magnetic unit in the drum housing. Cleaning principles are shown through the use of diagrams.

PERSONAL PROTECTION

Protective Hats 13

E. D. Bullard Co.—New, 4-page, illustrated circular describes the newest addition to the BULLARD Hard Boiled Hat line. Booklet contains information on the hat's protective qualities against falling objects; its resistance to moisture and electric shock. Diagrams show how one hat can be made to fit comfortably all head sizes and shapes.

VIBRATION CONTROL

Rubber, Cork, & Spring Mountings 14

Korfund Co., Inc.—4-page bulletin describes the advantages and limitations of spring mountings, rubber mountings and cork materials in the control of vibration. Data on their installation and uses are also given. A selector chart tabulates more than 50 typical machine and equipment applications and gives recommendations for the proper types of mounting for efficiency and satisfactory operation.

PAINTING FOR SAFETY & HEALTH

How to Improve Vision with Color 15

The Glidden Co.—New, 8-page booklet gives many colorful illustrations of machinery painted in attractive colors to lessen eyestrain, improve efficiency, improve morale and increase production. Last page of folder presents color combination charts and gives 8 color arrangements for rooms, floors and machinery.

ABOVE-GROUND PROTECTION

Steel Rolling Scaffolds 16

The Patent Scaffolding Co.—Well illustrated, 4-page bulletin describes TUBE LOX Rolling Scaffolds which consist of four basic parts: interlocking steel tubes of various lengths; two types of couplings, and heavy-duty 6" brake casters. Illustrations show many applications of this basic unit.

WRITE NUMBERS CORRESPONDING TO THE ITEMS HERE ☞

Your Company Name_____
(Please Print)

Address_____

Your Name_____

Your Title_____

Return This Coupon To:

SAFETY ENGINEERING
75 Fulton Street
New York 7, N. Y.

February, 1949

NEW PRODUCTS

For illustrated descriptive literature of products listed in this section readers may apply

TO SERVICE DEPT., SAFETY ENGINEERING MAGAZINE

NEW FIRST-AID EYE KIT

FOLLOWING a survey made to first-aid dispensaries in plants throughout the country, two registered pharmacists associated with Ohio First Aid & Pharmacal Company, developed a first-aid kit for eye safety and health. A great percentage of all eye injuries are given first-aid treatment with makeshift, and in many instances, dangerous equipment. Therefore, compact eye first-aid in one unit is intended to eliminate time loss when minutes count.

Opticlean First-Aid Eye Kit has been designed to eliminate many of the dangers of impromptu first-aid treatments for eye injuries. Not intended to replace professional services or for promiscuous use by untrained personnel, Opticlean kits put the best possible first-aid equipment in the hands of the first-aider who is instructed what first aid he can give in eye injury cases as well as what he should not do. The kit contains 15 eye health items which include eye patch, eye pads, adhesive strips, eye droppers, eye cup, cotton balls, cotton swabs, eye drops, castor oil, boric acid solution, boric acid ointment, and the new Magna-Clean Eye Particle Remover. This last is a non-breakable plastic magnifier which locates particles and then mechanically removes the foreign object with a specially smoothened wire loop. The magnet used is the G.E. Cunife Magnet, the finest permanent mechanical magnet obtainable.

All the items are clearly visible in a sturdy plastic box, transparent and airtight.

The kits are recommended as auxiliary equipment for regular first-aid kits. Refill materials are readily available. All kits are prepared and assembled under the supervision of registered pharmacists. The complete Opticlean Eye Kit is nominally priced and is distributed by Safety Clothing and Equipment Co.

Please use convenient coupon.

CESCO COMFORT-BRIDGE GOGGLE

A COMFORT-BRIDGE that virtually "floats" the goggle in correct position is the feature of Cesco's redesigned spectacle-type goggles. The broad-bearing jumbo pads plus balanced suspension of the frame distribute the light weight of the goggle evenly across the nose. The result, according to reports from the Chicago Eye Shield Company, is even greater wearing comfort than previously achieved with this type of goggle.

Comfort-Bridge pads also seal the entire eye area to prevent entrance of foreign particles and Super-Safety lenses add to the protective features of the goggle.

Another new development incorporated into this Cesco Comfort-Bridge goggle is an improved welding process that makes the goggle frame remarkably rugged.

These spectacle-type goggles are available with three bridge widths and three lens sizes to provide correct fit for various facial contours. They can be equipped with or without side shields; also with antiglare lenses if desired. For complete information, use the convenient coupon.

AKRO-MATS REDUCE SLIPPING

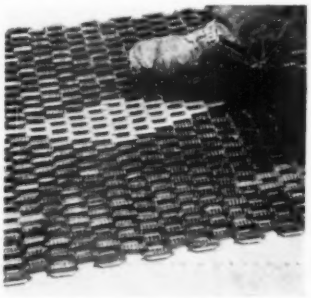
CORRUGATED mats made of especially compounded rubber links woven on 12 gauge spring steel wire provide sure, comfortable footing to stop slipping accidents and reduce worker fatigue. One now available from the General Scientific Equipment Co. of Pennsylvania.

Akro-Mats are particularly adapted for use where moisture, oils, animal fats, acids, chemicals, solvents and abrasives are apt to be on the floor as the rubber resists deterioration. They are easy to clean and easy to handle, lay flat or roll up.

Recommended by leading safety engineers to increase efficiency, production and profits. Many plants are now using these mats for positive under-foot protection on walking surfaces, loading platforms, washroom floors, elevators, cat walks, ramps, landings, approaches, sidewalks, inclines, aisles and steps.

Economically priced, Akro-Mats are available in any desired length and in widths up to 48 inches.

Please use the coupon for complete details.



INHALATOR

ADMINISTRATION of oxygen to gassed, or shocked persons is simplified and economized by the new Scott Oxygen Demand Inhalator. This Demand Inhalator can also be used in the administration of oxygen to "heart cases," after resuscitation.

Automatic and portable, if attached to C, D, or E cylinders, it can also be attached to larger oxygen cylinders for Industrial First Aid Room, or Industrial Hospital, or home use.

No adjustments are necessary to administer 100% oxygen or mixtures of oxygen with other gases.

Utilizing the time-proved Scott Demand-Flow principle, the oxygen flows only on inhalation, economizing the oxygen supply, permitting the patient to breathe normally with minimum effort, and eliminating any possibility of excess pressures. A unique "safety valve" permits air to be drawn into the mask if the oxygen supply should become exhausted.

This unit is designed as a supplement to, and not as a substitute for, resuscitators or manual resuscitation.

ANNOUNCEMENT

A SMITH & SON, INC. of Pennsylvania, manufacturers of the Reeves Stretcher and canvas specialities, announce their appointment as sole distributors of the new all-purpose folding stretcher known as Collapsi-Cot.

Its ingenious telescopic construction permits instant adjustment of positioning to meet various first aid requirements. The Collapsi-Cot serves as a flat stretcher, convalescent lounge or transfer Chair. It weighs only 25 pounds. Use the coupon.

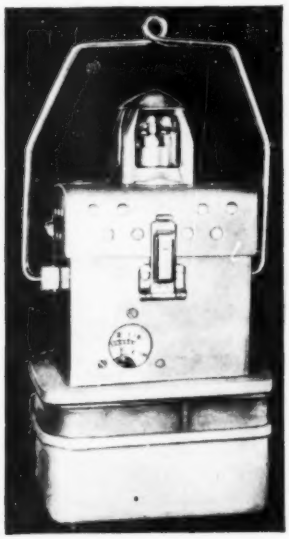
EXPLOSILITE WARNS OF GAS HAZARDS

FLASHING a brilliant red signal light when a dangerous concentration of combustible gas is present in the surrounding air, the new M.S.A. Explosilite, made by Mine Safety Appliances Company, serves as a dependable safety guard for workers in utility vaults and manholes, and in maintenance and repair operations in storage tanks and other confined spaces. Approved by the U. S. Bureau of Mines for use in atmospheres contaminated with methane.

Completely portable and self-contained, the M.S.A. Explosilite may be preset for a specific concentration of natural gas or petroleum vapors. It operates automatically, continuously sampling the air of a working place, and requires no training or skill on the part of the user.

Current is supplied by an Edison nickel-iron battery which will operate the instrument for 18 to 20 hours. The Explosilite is tamper-proof—can be opened for adjustment only by authorized personnel equipped with a special magnet.

Complete details about the M.S.A. Explosilite may be obtained by sending in the coupon.



FLOOR MACHINE

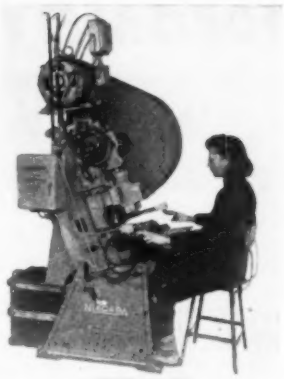
AN explosion proof floor machine for automatic scrubbing, cleaning and polishing of hazardous areas has been announced and put into volume production by Multi-Clean Products, Inc., of Minnesota.

The new machine, the MC-EX, was designed specifically for floor maintenance in petroleum refineries, chemical and munitions plants, distilleries, mills and other places where a spark might set off an explosion of fumes or dust. It has passed rigid laboratory tests, and been given unanimous approval by initial users. All equipment and components used in the manufacture of this floor cleaning machine have been listed by Underwriters Laboratories for use in hazardous areas. The General Electric motor, flexible coupling and totally enclosed safety switch are features of the new Multi-Clean explosion proof floor cleaning machine.

With the development of this safety floor scrubber, industry can now keep more areas scrubbed, polished and burnished insuring added protection against fire, explosion, and slip hazards.

Safety, the principal consideration in designing the new machine, was achieved without sacrificing important Multi-Clean features.

The adjustable handle and the center balance combine to assure easy operation. Flip up wheels require no lubrication. Bronze castings are used at all points of strain. Send in the coupon.



MICROTRIP

MICRO SWITCH, of Illinois, announces a new two-hand easy-to-operate electrical device for safe control of tripping mechanisms on Punch Presses, Riveting Machines, Shears, Spot Welders, and Air Presses.

Light touch actuation—from 10 to 18 ounces—reduces operators' fatigue, which in many cases has resulted in a 10 to 25% increase in production.

Microtrip makes certain that both hands of the operator are out of the hazard area while the press ram is in motion. Microtrip requires that both hands touch the switch buttons in order to operate the tripping mechanism. If both switches are not actuated at the same time, the electrical circuit controlling the tripping mechanism becomes inoperative.

Microtrip consists of a control box, two Micro precision switches, and the necessary tripping mechanism. It is easily and quickly installed on present equipment.

February, 1949

To SAFETY ENGINEERING

75 Fulton St., New York 7, N. Y.

For prices and complete details of items mentioned in this month's "What's New in Safety Products," check items that interest you and mail coupon.

- ☐ First-Aid Eye Kit
- ☐ Cesco Goggle
- ☐ Akro-Mats
- ☐ Scott Inhalator
- ☐ Collapsi-Cot
- ☐ Explosilite
- ☐ Floor Machine
- ☐ Microtrip

Firm Name .....

Attention of .....

Position .....

Firm Address .....

City .....

FOR SAFETY PLUS

For *better* rubberized Work Gloves, look for the HOOD Trade Mark—a sign of quality since 1896. Styles to suit every requirement. Send for folder. Order from your jobber.

HOOD RUBBER CO., WATERTOWN, MASS.
A Division of the B. F. Goodrich Company

Surplus Extinguishers

(From page 37) tanks, boats, etc. are not suited for other than the exact use for which they were sold. They were designed to go with certain apparatus and for certain size and type spaces. Many of these system units were fitted with special, high rate of discharge valves which, although ideal for the special military use and installation for which they were sold, may be unwise and unsuited for any other use.

In short, it is evident from any practical view that, although some of the war surplus extinguishers may be applicable and safe, even these deserve to be considered with a great deal of skepticism, in view of their age and special construction and the lack of Underwriters' Laboratories' label. Converted extinguishers, unless altered by reputable and known manufacturers of fire extinguishers and bearing the listing and approval of Underwriters' Laboratories, Inc. should not be considered.

Index to Advertisers and their Agencies

Accident Prevention Institute 57
Acme Protection Equipment Co., *Fred H. Ebersold, Inc., Chicago* 48
American Chain Div., American Chain & Cable Co., *Reincke, Meyer & Finn, Inc., Chicago* 63
American Industrial Safety Equipment Co., *Allied Advertising Agency, Inc., Cleveland* 44
American Mat Corp., *Wendt Advertising Agency, Toledo* 65
American Optical Co., *Sutherland-Abbott, Inc., Boston* Inside Front Cover
American Safety Tank Co., *R. J. Potts, Calkins & Holden, Kansas City* 34
Ansul Chemical Co., Inc., *J. A. Cormack, Milwaukee* 4

Breck, John H., Inc., *Charles Sheldon Advertising, Springfield, Mass.* 60

Cambridge Rubber Co., *J. M. Reilly Co., Boston* 31
Carbisulphoil Co., *Tracey-Locke Co., Inc., Dallas* 67
Chic Maid Hat Mfg. Co., *Armand S. Weill Co., Inc., Buffalo* 56
Chicago Eye Shield Co., *Reincke, Meyer & Finn, Inc., Chicago* Inside Back Cover
Cover, H. S., *Jerry Bryant Advertising, Chicago* 39

Davis Emergency Equipment Co., *Mercready, Handy & Van Denburgh, Newark* 41
Dickson Corp., *F. B. Hubert Advertising Counsel, Detroit* 53

Faulk, F. R. 58

General Detroit Corp., *Holden, Clifford, Flint, Inc., Detroit* 2
General Scientific Equipment Co., *John P. Eldridge, Advertising, Philadelphia* 50
Gerson-Stewart Corp., *Lang, Fisher & Stashower, Inc., Cleveland* 40
Gro-Cord Rubber Co., *Whipple & Black Advertising Co., Detroit* 10

Hillyard Sales Cos., *Harrison Hartley Advertising, St. Joseph* 36
Hood Rubber Co., *Henry A. Louden Advertising, Boston* 72
Hooper, Wm. E., & Sons Co., *McLain Organization, Philadelphia* 3
Hy-Test Div., International Shoe Co., *Westheimer & Co., St. Louis* 6
Hynson, Westcott & Dunning, Inc. Back Cover

Knapp Bros. Shoe Mfg. Co., *Ingalls-Miniter Co., Boston* 59

Lehigh Safety Shoe Co., *Frederick-Clinton Co., Inc., New York* 1
Littell, F. J., Machine Co., *J. M. Haggard Advertising, Chicago* 62

Magnesium Corp. of America, *Arthur R. Mogge, Inc., Chicago* 35
Metal Arts Co., Inc., *Hutchins Advertising Co., Inc., Rochester* 53
Milburn Co., *St. Claire Advertising Agency, Detroit* 38
Miller Equipment Co., *P. W. Price Advertising, Erie, Pa.* 47

Pendergast, Albert W. 49
Phoenix Mfg. Co. 48
Pioneer Rubber Co., *Carr Liggett Advertising, Inc., Cleveland* 64

Reece Wooden Sole Shoe Co. 42
Rose Mfg. Co., *Walter Du Bree, Denver* 45

Sanitary Soap Co., *Salow & Reidl Advertising Agency, Passaic* 33
Scott Aviation Corp., *Melvin F. Hall Advertising Agency, Inc., Buffalo* 37
Stonehouse Signs, Inc., *Walter Du Bree, Denver* 5

Tamms Silica Co., *Frederick, Franz & MacGowan, Chicago* 57

Wash-Rite Co., *A. V. Grindle Advertising Agency, Indianapolis* 51
Watchemoket Optical Co., Inc., *Frederick-Clinton Co., Inc., New York* 9
West Disinfection Co., *Silberstein-Goldsmith, Inc., New York* 27
Wheeler Insulated Wire Co., *Hugh H. Graham & Associates, Inc., New Britain, Conn.* 46
Wilkins Co., *Osborn-Propst Advertising Agency, Syracuse* 43
Williams Jewelry Co., *Jerry Bryant Advertising, Chicago* 51

PROVED AND APPROVED

New CESCO CUP-TYPE GOGGLES

FEATURING... *The COMFORT-KING Headband—holds goggles firmly with 30% less tension. Made of round molded rubber—will not kink, curl or twist. No buckles or sharp edges. Instant adjustment to any head size.*

CESCO Chippers Goggles • Number 545-C, with brown thermoplastic cups, shown above. **Number 545-T,** with transparent cups, shown below. Both these models are well ventilated, and are equipped with 50 mm Super-Safety Lenses.

CESCO Welders Goggles • Number 545-W, with 50 mm Cescoweld and cover lenses.

Job-Tested and Worker-Endorsed where constant use is required

• CESCO's new development in cup-type goggles increases wearer comfort and assures greater worker safety. These CESCO goggles have the "feel" of lightweight goggles, yet give all the protection good cup-type goggles must provide.

CESCO goggle cups are engineered to fit both left and right eye areas snugly, yet gently. Broad contact surfaces and correct balance eliminate pressure spots. COMFORT-KING Headbands provide the right firmness to hold the goggles comfortably in correct position.

If your workers are not yet wearing the new CESCO Cup-Type Goggles, order them now. Use will prove their advantages to you.

***New* CESCO CATALOG**

Tells you where to use, how to use, and how to select industrial protective equipment. Be sure to have this safety guide. Write for your copy.

CHICAGO EYE SHIELD CO. • 2310 Warren Boulevard • Chicago 12, Illinois

CESCO FOR SAFETY

CESCO

OFFICES IN: Boston, Buffalo, Cincinnati, Cleveland, Columbus, Dallas, Detroit, East Orange, Houston, Los Angeles, Montreal, Philadelphia, Pittsburgh, Seattle, St. Louis, St. Paul, Toledo, Tulsa

For Industrial First Aid

Mercurochrome

Preventing infection is important in reducing lost time due to accidents. Even minor wounds may lead to serious infection and should receive proper first aid treatment.

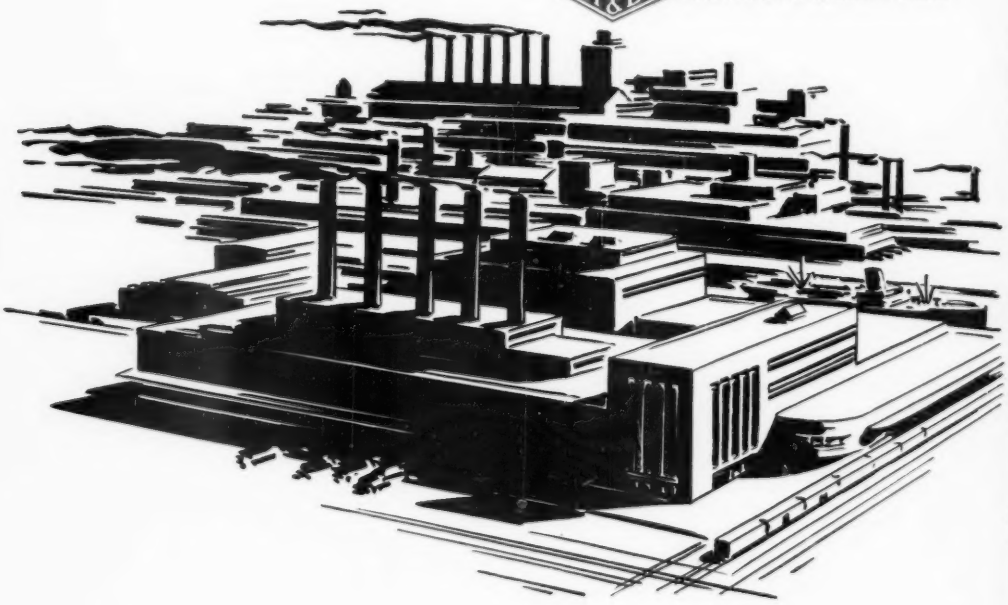
Mercurochrome* (H. W. & D. Brand of merbromin, dibromoxymercurifluorescein-sodium) is especially suitable for first aid purposes. The 2% aqueous solution is not irritating or toxic in wounds.

Minor injuries are reported promptly when Mercurochrome is the routine antiseptic because treatment is not painful.

Other advantages are that Mercurochrome solutions keep indefinitely and the color shows where it has been applied.

Mercurochrome is accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

* Reg. U. S. Pat. Off.

HYNSON, WESTCOTT & DUNNING, Inc.

HWD BALTIMORE 1, MARYLAND